LINUX USER & DEVELOPER

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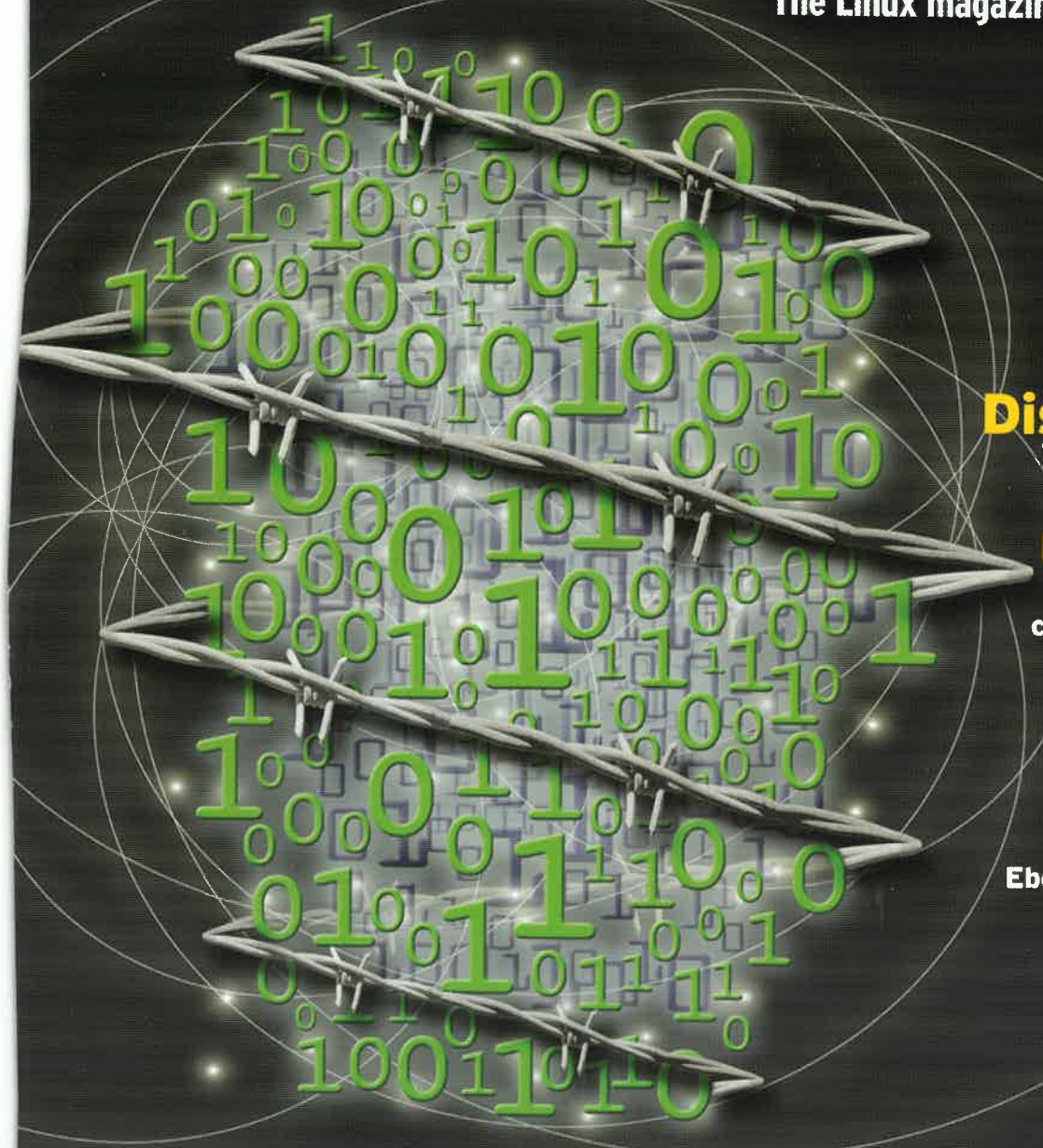
The Linux magazine for IT decision makers



Playing safe
Open Source insurance – what's on offer and is it necessary?

Distro round-up
The latest desktop distros compared side by side

Under the brim
Is the industry Red Hat created turning against it?

Rebirth
How to bring old PCs back to life with Linux

Opinion
Eben Moglen, Danny O'Brien and Richard Hillesley

Protecting the code

How patents are killing innovation

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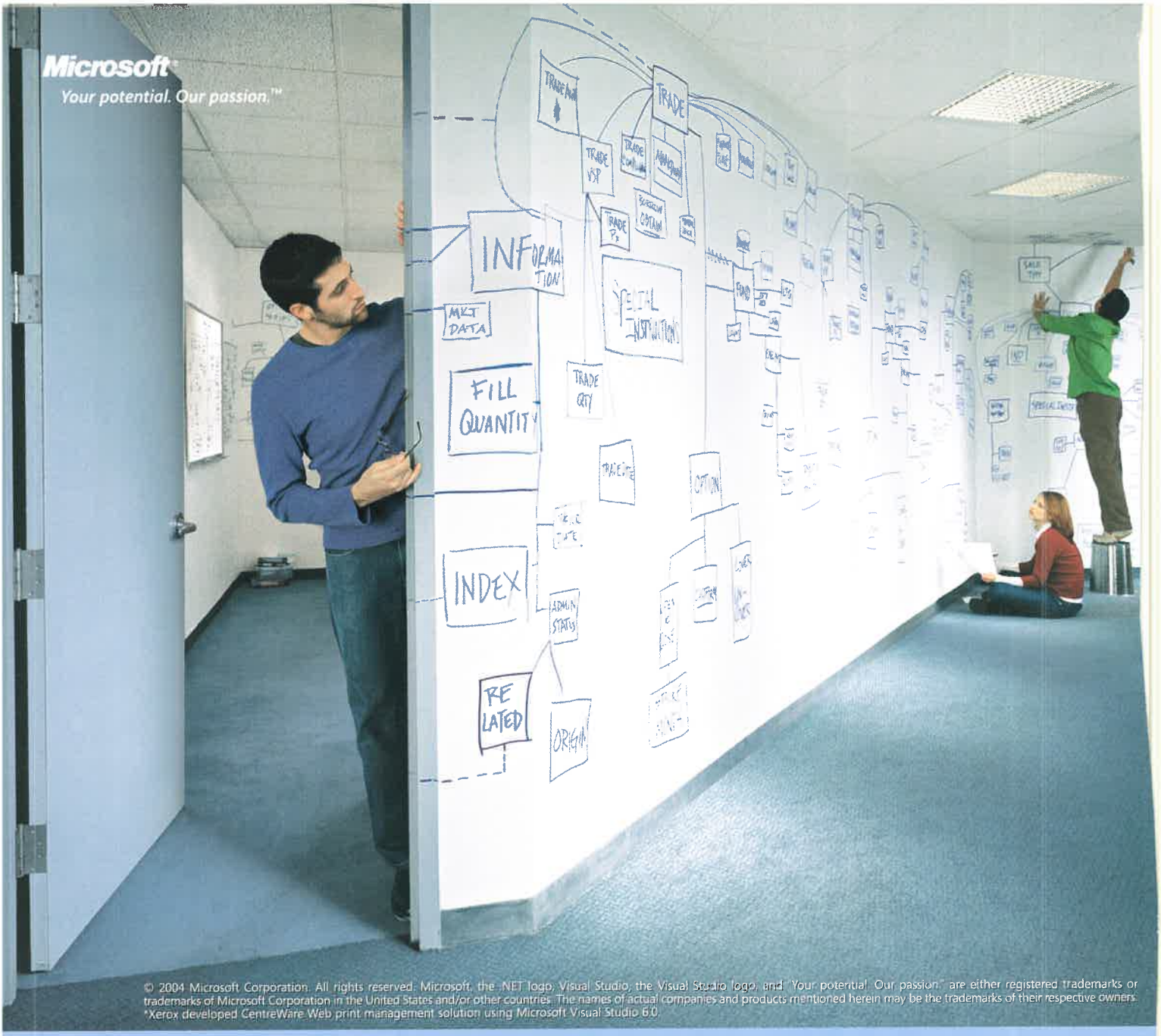

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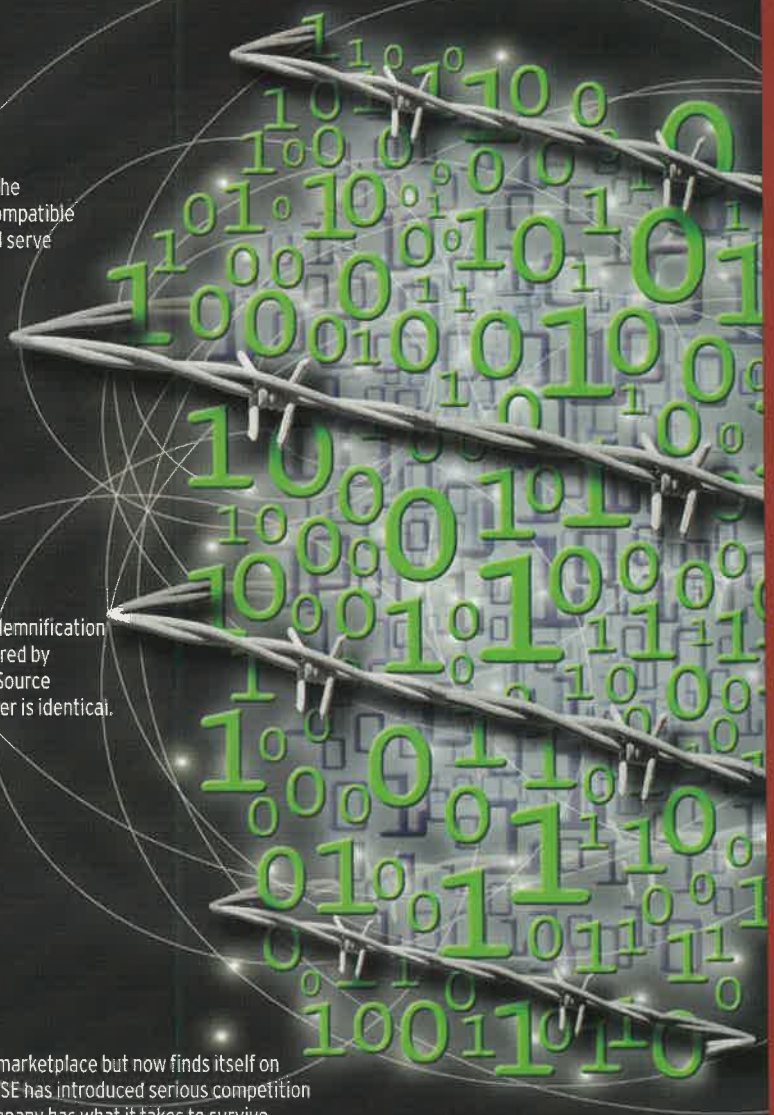

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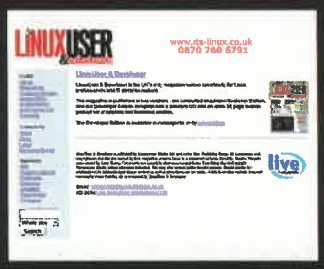

LINUX USER & DEVELOPER

The Linux magazine for IT decision makers

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Throughout the magazine we use the word Linux to refer to an entire operating system. This is merely shorthand to avoid confusion for less knowledgeable readers and ease reading. We acknowledge that the full title of the Linux operating system is GNU/Linux.

The Tux penguin graphic was created by Larry Ewing (lewing@isc.tamu.edu) using The Gimp.

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DEVELOPER SECTION

The Developer section of *LinuxUser & Developer* is a bonus 32-page addition included with the newsstand and paid-for subscription copies of the magazine. These issues of the magazine usually come complete with coverdiscs and this month we feature a world exclusive live eval version of SUSE 9.1. The Developer section itself includes how tos, tutorials and features for all level of Linux user, from beginner to expert. To learn how to upgrade an existing subscription, see page 64.

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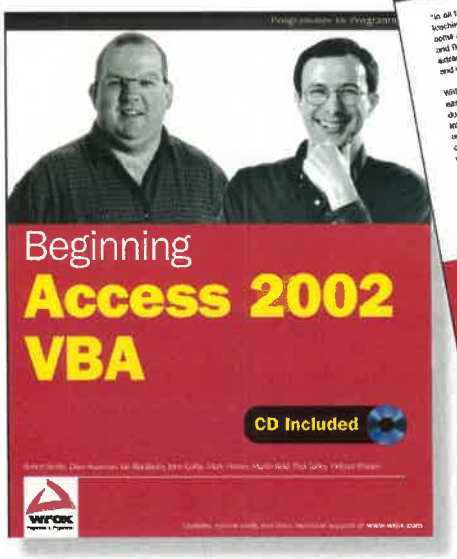

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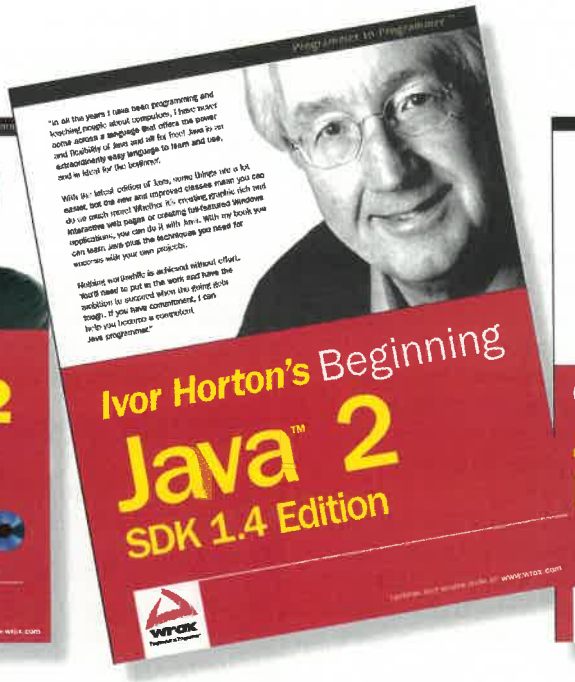

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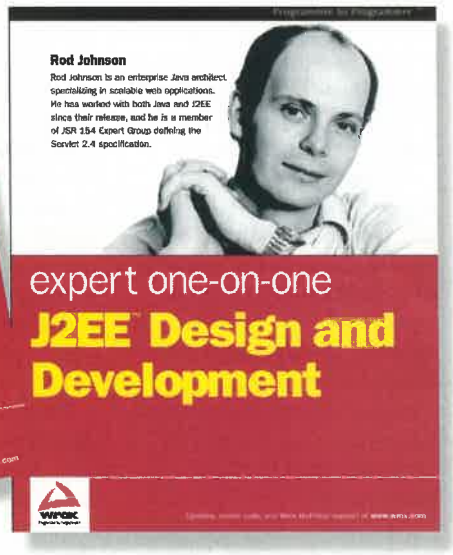

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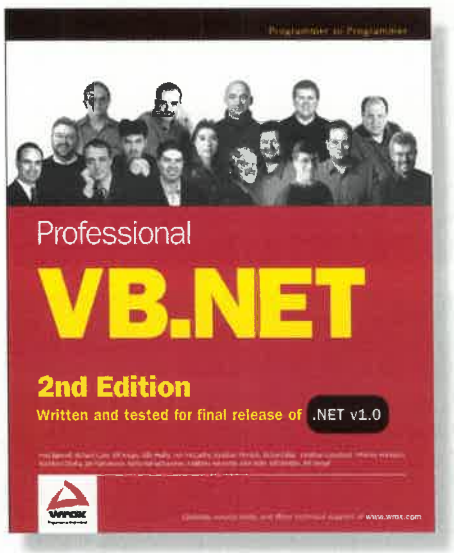

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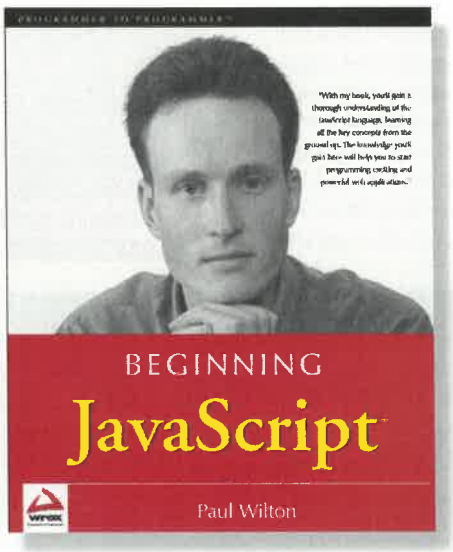

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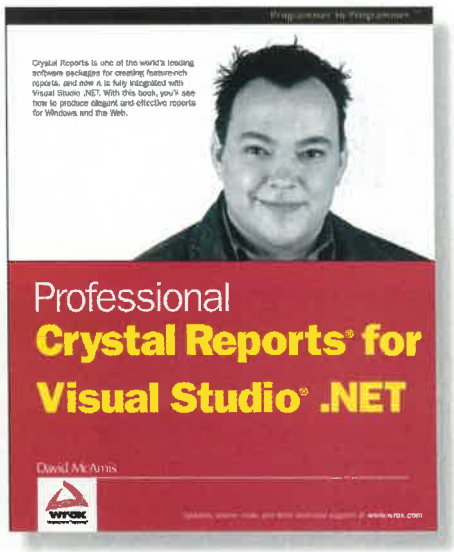

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Kernel contributions to be certified

Linus Torvalds and the Open Source Development Labs (OSDL) have announced a new documentation step in the Linux kernel submission process. In a surprise move that has defied critics, future code submissions to the kernel will not be accepted for inclusion unless they have been signed off against a Developer's Certificate of Origin (DCO). The DCO is designed to keep track of contributions to the kernel and give contributors and maintainers due credit for their work.

"This is not about proving authorship – it's about documenting the process," wrote Torvalds in an informal posting to other developers on the Linux Kernel Mailing List. "This does not replace or preclude things like PGP-signed emails; this is _documenting_ how we work, so that we can show people who don't understand the Open Source process."

Stuart Cohen, CEO of OSDL, the industry organisation that employs Torvalds, added that the decision was not directly influenced by the SCO lawsuit or by the spurious report from the Alexis de Tocqueville Institution (see opposite page). Cohen said the timing was coincidental and that Linus had been discussing the proposal with the subsystem maintainers and other leading contributors for some time.

"It's not because of the SCO lawsuit, it's not because of that research report," Cohen commented. "Those are PR exercises. One has nothing to do with the other."

Searching for attribution for early contributions to the code has been a time-consuming exercise and Torvalds acknowledged as much in his posting to the kernel mailing lists: "Some of you may have heard of this crazy company called SCO [...] who seem to have a hard time believing that Open Source works better than their five engineers do. They've apparently made a couple of outlandish claims about where our source code comes from, including claiming to own code that was clearly written by me over a decade ago.

"People have been pretty good (understatement of the year) at debunking those claims, but the fact is that part of that debunking involved searching kernel mailing list archives from 1992 etc. Not much fun. For example, in the case of 'ctype.h', what made it so clear that it was original work was the horrible bugs it contained originally, and since we obviously don't do bugs any more (right?), we should probably plan on having other ways to document the origin of the code [...] To avoid these kinds of issues 10 years from now, I'm suggesting that we put in a process to explicitly document not only where a patch comes from (which we do actually already document pretty well in the changelogs), but the path it came through."

Kernel patches are not sent directly to Torvalds but reach him though a chain of subsystem maintainers, who check the quality and aptitude of the code. As Torvalds says, there are "a lot of subsystems I have no clue about, and thus no way of judging how good the patch is. So I end up seeing mostly the maintainers of the subsystem, and when a bug happens, what I want to see is the maintainer's name, not a random developer... So at least for me, the _chain_ is actually mostly more important than the actual originator. There is also another issue, namely the fact than when I (or anybody else, for that matter) get an emailed patch, the only thing I can see directly is the sender information, and that's the part I trust. When Andrew sends me a patch, I trust it because it comes from him – even if the original author may be somebody I don't know. So the _path_ the patch came in through actually documents that chain of trust – we all tend to know the 'next hop', but we do _not_ necessarily have direct knowledge of the full chain."

Developer's Certificate of Origin 1.0

The initial version of the DCO to be signed by each developer or maintainer will be as follows:

By making a contribution to this project, I certify that:

(a) The contribution was created in whole or in part by me and I have the right to submit it under the Open Source license indicated in the file; or

(b) The contribution is based upon previous work that, to the best of my knowledge, is covered under an appropriate Open Source license and I have the right under that license to submit that work with modifications, whether created in whole or in part by me, under the same Open Source license (unless I am permitted to submit under a different license), as indicated in the file; or

(c) The contribution was provided directly to me by some other person who certified (a), (b) or (c) and I have not modified it.

NEWS IN BRIEF

The Free Software Foundation has responded to SCO's attempt to subpoena paperwork connected to the GPL. It's refusing to handover the requested documentation relating to legal challenges against the GPL because it feels such information is confidential. However, it also realises that to avoid handing over the documents means more expensive legal wrangling. "SCO is a blip," writes FSF's Bradley Kuhn in a document explaining the issues. "[It's] a precursor to the challenges Free Software will face. We strive to be ahead of that curve and lead the way for a legally certain future for Free Software."
www.fsf.org/philosophy/sco/subpoena.html

The organisation behind the Gentoo Linux distro has turned itself into a not-for-profit organisation. This brings obvious benefits, such as tax exemption on income from its new online store. Currently the organisation is registered as not-for-profit in New Mexico and it is hoped that within six months this status will be made US-wide.
www.gentoo.org

A fork of the Mozilla code has been shrunk down so that it will fit better on embedded devices. The Minimo project aims to produce a minimalist browser with a small application layer and without dependency on various libraries or functionality. So far the browser has been demoed on the GPE Palmtop Environment and on IPAQ devices.
www.mozilla.org/projects/minimo/

Manufacturer of Windows and Macintosh system tools, Symantec, has announced that it might be shifting its own administrative facilities onto Linux. The company's CEO, John Thompson, said that he sees Linux as "an alternative to the monopoly position that Microsoft has on the desktop." It's unclear whether this means the company sees any potential in porting its software tools to Linux.
www.symantec.com

Mandrake 10 is now available for download. The company traditionally restricts access to its latest distros to paid-up members of its 'club' and then, after some time has passed, makes the .iso images available to the rest of the world. The situation was slightly different this time around because of the earlier testing period during

Linus under attack

Chief kernel developer Linus Torvalds has faced an extraordinary personal attack from the Alexis de Tocqueville Institution, a right-wing 'think tank' that has in the past been linked to Microsoft.

Its president, Kenneth Brown, has reportedly written a book that implies Torvalds couldn't have produced the first version of the Linux kernel in the time period he says he did, and with his limited coding experience at the time. Brown alleges that it's unlikely that Torvalds could have come up with the 10,000 lines of code that constituted version 0.01 of Linux back in 1992 and that he must therefore have stolen from other sources. Although careful in his choice of words, Brown implies that the code was most likely taken from Minix, which Torvalds used as a development platform, or even from Unix, courtesy of the famous Lions' book, which reproduces the early Unix source code.

Brown claims his findings are backed up by 'extensive interviews' with several key figures in the Unix and Linux worlds, including Minix developer Andrew Tanenbaum, Unix developer Dennis Ritchie, and Free Software Foundation chief Richard Stallman. However, each of the individuals concerned has come forward in turn to dispute Brown's findings.

Minix creator Professor Andrew Tanenbaum has been highly critical of ADTI and Ken Brown

In a series of entertaining ripostes on his website (www.cs.vu.nl/~ast/brown/), Tanenbaum says that Brown interviewed him seemingly with an agenda, constantly alleging that Linus simply couldn't have produced Linux single-handedly. In response, Tanenbaum pointed out the infamous micro vs monolithic kernel differences of Minix and Linux, which means that code theft was impossible. However, Tanenbaum says that Brown wasn't interested. Indeed, Brown paid for a code comparison of Minix and the 0.01 version of Linux, which turned up no similarities.

Dennis Ritchie pointed out that the 'extensive interview' Brown claims to have had with him was actually limited to a single email asking more pointed questions. These again made allegations about Linus' ability to produce the initial kernel. Stallman added that his replies to Brown's interview questions have been quoted out of context.

Linus himself responded to Brown's potentially libellous comments with typical good humour, admitting that it was true that he didn't code Linux. He was, he said, merely acting as a frontman for the real coders – the tooth fairy and Father Christmas. He also points out that he doesn't have a copy of the Lions book and has never read it.

SERVER BOOST

Research group Gartner has said that the server market is experiencing a boom period, which it puts down to the availability of Linux on inexpensive commodity hardware. Worldwide sales of all types of server increased 27.1% in the first quarter of 2004, it reported, with revenues of Linux servers increasing 57.3% in that period. Revenues on traditional Unix servers fell by 2.3%. IBM still leads the market although both HP and Dell were seen to have strong market share. In contrast, Sun's revenues fell 12.5% despite the fact it shipped more units.

Gartner says that increasing database sales are also responsible for much of the boom in Linux server sales, with both IBM and Oracle providing offerings on the Linux platform. According to Gartner's figures, Oracle increased its share in the Linux database market from 28.5% in 2003 to 70% today. Oracle's share of the Unix database market shrunk 6% in 2003, down to 57%.

www.gartner.com

which anybody could download Mandrake 10 Community Edition. This was made freely available for user testing and bug filing prior to the main release.

www.mandrake.com

Maker of software asset management tools, LogicLibrary, has created the Open Source Licence Compliance Module. This is designed to help companies keep track of various Open Source licenses that they use and is being offered largely to avoid issues to do with incompatible licenses. The software takes the form of a database, which holds meta data about licenses and can include a compliance list for each piece of software.

www.logiclibrary.com

The grsecurity tool was almost forced to close its doors after sponsorship for its main developer dried up. The tool, which is released under the GPL and provides server security add-ins, such as an enhanced chroot jail, is used by many corporations as part of their Linux setup. However, its developer found himself in debt after working full-time on the software. After an appeal for money (boosted by an appearance on *Slashdot*), he secured sufficient funding to carry on and has even been able to announce future plans for the project.

http://grsecurity.net/

Macromedia has released a new Linux version of the Flash Player plug-in, which works with Web browsers to provide multimedia and interaction on websites. Flash Player 7 adds-in support for SOAP technologies and brings the player into line with the versions currently available for Windows and the Apple Macintosh. However, it is still only available as a binary-only closed-source download.

www.macromedia.com

SCO has expanded its campaign of bullying and FUD into Australia, prompting the formation of Open Source Industry Australia (OSIA). Its inaugural task was to publish a paper outlining how SCO is manipulating the truth and explaining why businesses shouldn't capitulate to their demands (at least not until the company has proved itself in court, if such a thing ever comes about). OSIA also suggests any companies receiving threatening letters from SCO should submit them to the Australian Competition and Consumer Commission.

www.osia.net.au

Xandros made free

Distro company Xandros has released a version of its desktop Linux product that's free for home use and for which redistribution is encouraged, provided this is done non-commercially.

Open Circulation edition is a hard disk install of the award-winning desktop-orientated Linux, which offers most of the same functions as the commercial offerings, although proprietary components such as CrossOver Office are not included. Additionally, the CD-writing component burns at the lowest possible speed of the user's CD-R/RW drive, and although the Opera Web browser is provided, it is the shareware edition supported by advertising.

The product also comes without email or phone support, although users can access Xandros' online forums and can also download software updates.

The company's current product range, comprising Standard, Deluxe and Business editions, is still available and are of unchanged status in light of the offer. It is no doubt hoped some users might upgrade if they find the Open Circulation edition to their tastes.

Xandros' management sees the new offer in evangelic terms and appears to be attempting to rescue Windows users from the dire awfulness of their operating system.

"We want the Open Circulation version of the Xandros desktop to replicate like a virus," Xandros Chairman and CTO Frederick Berenstein says. "Open computing is coming of age and every desktop user should know that there's a full-featured Windows alternative out there [...] They're going to love it!"

www.xandros.com

New Java Desktop

Sun has released Java Desktop System, Release 2. This is an update of the company's initial desktop operating system, which was branded under Sun's name and had a unique look and feel, but which was based upon SUSE Linux technology.

This new release remains largely true to these roots, but adds-in centralised management and configuration, designed to help deployment of the OS across hundreds of enterprise workstations. Additionally, patches and updates can be applied to multiple systems using the new software, which also allows administrators to impose rules and policies on users.

Perhaps more importantly from Sun's point of view, Release 2 incorporates Java Studio Standard and NetBeans IDE 3.6. This effectively turns the operating system into a powerful Java development kit and its inclusion is seen by many as a strident attempt to push Java in the enterprise.

Sun has also announced that it will make its proprietary Solaris Unix operating system available under an Open Source licence, although it has not yet announced which. It's widely believed that the GPL won't be used. Meanwhile, Sun representatives have stated that the development of the Java programming language will not be opened up after all, despite recent controversy and suggestions to the contrary.

wwws.sun.com/software/javadesktopsystem/

ORACLE SEES FUTURE

Oracle is to switch its 9,000-strong staff of developers to Linux by the end of 2004. The move will turn Linux into Oracle's core platform and marks a shift away from the Sun technology the company has traditionally allied itself to. It's believed the move is largely down to the increasing popularity of inexpensive commodity hardware for which Linux is a natural (and inexpensive) choice. Wim Coekaerts, Director of Linux Engineering at Oracle, also says that he believes Linux is faster than its Unix competitors. Coekaerts is apparently responsible for Oracle's switch in platform, convincing Oracle boss Larry Ellison of Linux's potential.

However, the move to Linux isn't as clear-cut as it might at first seem. The company also has an eye on competition from the likes of MySQL, which has a dual-licensing scheme, meaning it can be obtained for free. MySQL has always run on Linux and is making serious in-roads into Oracle's traditional market share. IBM has also adapted DB2 to run on commodity hardware.

www.oracle.com

Linux Networx has announced it is able to provide grid-enabled cluster computing solutions. The Evolocity cluster solution can now be deployed with grid software from Platform Computing and Open Source grid experts Globus to help customers make better use of IT resources and run jobs across a grid infrastructure. Linux Networx demonstrated its new technology at the GT'04 tradeshow in Philadelphia in May.

www.linuxnetworx.com/grid

MetaCase has released a Linux version of MetaEdit+, its customisable modelling and code generation environment, which is aimed at the expert developer looking to generate full code directly from models. It runs on all major Linux distributions, such as Red Hat 6.0 or later, and includes the Method Workbench component which an experienced developer can use to define a modelling language as a meta model.

www.metacase.com

Digital Airways has released a user-interface building tool for mobile phones that run Linux. The tool, which works in the C language, is designed to create UIs that can fit in limited system resources, as found on mobile technology. It comprises Keleido Design, a drag-and-drop tool that enables the creation of GUIs; Kaleido Viewer, a testing and validation application that lets developers view their interface on screen; and Kaleido Runtime, an API that provides the GUI components on the phone itself.

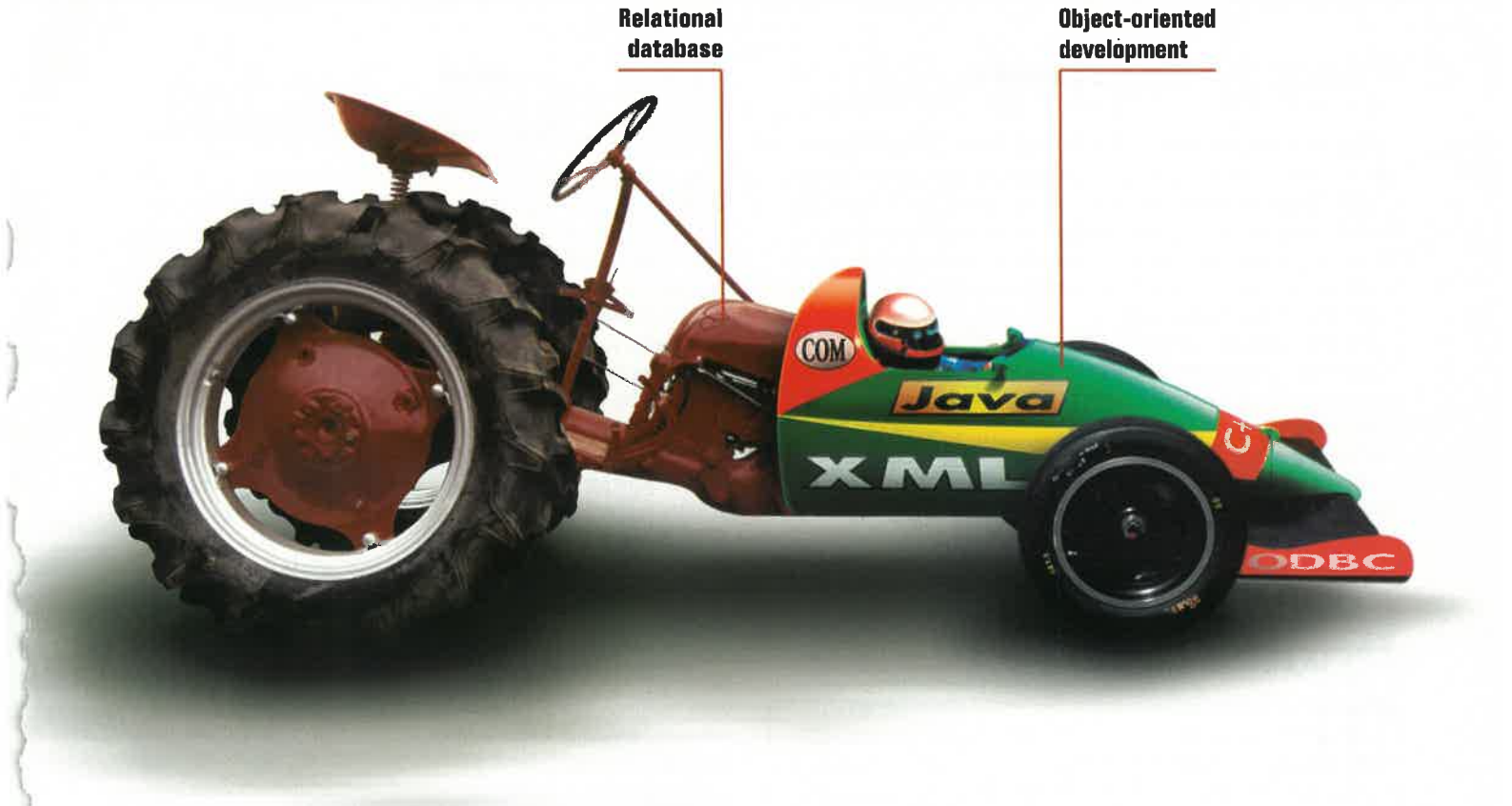
www.digitalairways.com

The CVS tool has come under attack from crackers in an incident that saw the popular developer collaboration tool's website being compromised. An initial investigation revealed a critical flaw, which was patched, but some weeks later another six security flaws were unearthed as part of the same investigation. Subversion has also been shown to have a different but no less critical security flaw.

www.cvshome.org
http://subversion.tigris.org/

Lindows has found a novel way to sell its Linspire distro. It is bundling two other distros alongside it and hopes to let its users decide which is best. The Desktop Linux Comparison Kit contains Linspire alongside Fedora Core and Mandrake, and will go on sale for US$39.95 (US$29.95 if purchased online). A total of 4Gb of data is on offer and the liberal licenses of each distro mean they can be installed upon multiple PCs.

www.lindows.com



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Computer Associates open up

Computer Associates has created its own CA Trusted Open Source License in a move that it hopes will prove its Open Source credentials. The new license is based on the common public licence (CPL) and the first product to use it is the Ingres database. Ingres started life as Open Source, developed by the University of Berkeley, California, and was released under the BSD license. However, it changed hands several times and ended-up under Computer Associates' control.

The product will still be developed by Computer Associates but it is hoped that the Open Source community will also have an input. The company envisions the product being used in that embedded devices or added-in to other software products that require a high-end and fully functioned relational database component.

The only license limitation on the use of Ingres appears to be that the source must be provided with any new product that incorporates its code.

http://ca.com/opensource

India creates distro

India has seen the creation of its first commercial distro company. Everyone's Linux (ELX), based in Hyderabad, hopes to capitalise on the growing reliance on Linux within a country that has seen massive foreign IT investment over the last few years, and that is potentially one of the world's biggest IT markets.

Everyone's Linux claims to be one of the first distro companies in India

The company's first product is BizDesk, priced at Rs 500 (around £6), which comprises ELX Linux Desktop, as well as an office suite, email client, antivirus tool, web browser, DVD player, project-management software, and instant-messaging clients. However, it's envisaged that the company will also create a server distribution that will be priced at around Rs 14,000 (around £170), as well as a thin client product based on the Linux Terminal Server Project (LTSP).

ELX is aiming its products at Windows users and claims an almost zero learning curve. To this end, and like many commercial distros, it packs in many proprietary components, such as RealPlayer and Adobe Acrobat. Easy installation with partitioning resizing is also on offer and the distro apparently contains custom code to allow it to work more like Windows, making frequent use of the right-click menu to allow local network file sharing or zip compression, for example.

www.elxlinux.com

BEA builds Beehive

Application infrastructure company BEA has got together with the Apache Software Foundation to create Project Beehive, an Open Source project based in the Apache community, which aims to build enterprise-ready Java applications. The new project is designed to encourage industry-wide collaboration with a view to producing so-called Service-Oriented Architecture (SOA) applications. It's hoped that the collaborative atmosphere will protect ideas from proprietary interests and encourage more developers to take-up Java. Any resulting software will be released under the Apache 2.0 license. BEA itself will contribute its own developers as part of its WebLogic Workshop developer community, which runs in parallel with the Beehive scheme. Apache will provide management for the project.

Beehive builds on other Apache projects with which BEA has had either direct or indirect involvement, such as XMLBeans, Tomcat, Struts, and Axis. Additionally, the company is donating its Java annotations, Java Controls, Java Web services and Java Page Flows to the project. These are reusable meta-data driven software components based on drag-and-drop technology that can easily integrate into BEA and other software platforms.

www.bea.com

NX switched on

Red Hat and Intel have worked together to produce a kernel patch that supports the NX feature of recent x86 processors. NX stands for 'no execute' and is a method of stopping unauthorised code being run. It's a powerful security feature that should put an end to the likes of buffer-underrun compromises caused by buggy software, which has led to the likes of viruses and trojan horses proliferating wildly on the Windows platform.

However, although on offer in the latest CPUs, Linux is the first operating system to actively offer support for NX, albeit in beta testing stage. It's believed that Windows XP will gain support towards the end of the year when Service Pack 2 is made available.

Although NX support can cause problems for some applications, the list of affected software is short and Linus Torvalds has argued on the kernel mailing list that the feature should therefore be activated by default, with perhaps a legacy mode available at boot-up for those who find it causes problems.

www.redhat.com
www.intel.com

Open Source Development Labs (OSDL) has announced that Bull HN Information Systems has joined its ranks in a bid to strengthen the Lab's efforts to accelerate the growth and adoption of Linux in the enterprise. The move will capitalise on Bull's experience in large enterprise systems. Bull was one of the first server companies to rely on Linux for support of mainframe environments on open standards-based servers.

www.osdl.org

IBM has created a server-side office suite that it hopes will compete with Microsoft Office. Details are currently scant on how the new system works or what it offers, but it appears it will work on a central server and will be accessible by workstations via their browsers. It will therefore work on any operating system, claims IBM, including handheld or other embedded devices. Users will pay IBM a small monthly fee to use the software and there will be an initial setup fee to purchase the server software, including WebSphere, which appears to be central to the technology.

www.ibm.com

A new version of the popular Opera Web browser has been released. Running on Linux as well as most other popular operating systems, version 7.51 brings a revamped user interface that offers customisation and complete integration of Internet activities courtesy of a new panel selector. The company hopes its browser will gain users while Microsoft dithers over the new release of Internet Explorer: "Internet Explorer is an aged application that Microsoft has not given a major update in years," claimed Jon von Tetzchner, CEO of Opera Software.

www.opera.com

The Playfair project is back online after being closed down by Apple. The controversial software, renamed Hymn, lets users of Open Source operating systems play AAC-encoded audio. To do this it strips out digital rights management protection from the files. The software is released under the GPL and was hosted on Sourceforget.net until Apple used the draconian DMCA to force its removal.

http://hymn-project.org/

O'Reilly has become a reseller for several Mandrakesoft products in the USA and Canada. Mandrakelinux Discovery 10.0 and PowerPack 10.0 will be distributed through O'Reilly's network of selling points. This is being seen as a significant partnership for Mandrakesoft, who, whilst popular in Europe and via download, lacked a significant retail outlet in America.

www.mandrake.com

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Events

Linux- and Free Software-related events coming up in the next month include:

German Perl Workshop 6.0

29 June-1 July: After the success of the previous German Perl Workshops, version 6.0 aims at fostering exchange and social networking between Perl module developers and advanced Perl users in the German-speaking Perl community. The workshop is to be held in Stuttgart.
www.perlworkshop.de/2004/

Usenix'04

27 June-2 July: Join us in Boston for the newly expanded USENIX Annual Technical Conference. There will be six days of tutorials, renowned speakers every morning, new SIG sessions, and more.
www.usenix.org/#sec04

GVADEC 2004

28-30 June: The 5th annual GNOME User and Developer European Conference (GUADEC) will bring developers, GNOME Foundation leaders and individual business and government GNOME users to Agder University College in Kristiansand, Norway.
http://2004.guadec.org/

Real-time and Embedded Systems Workshop

12-15 July: Following the success of past real-time and embedded workshops, OMG is hosting this workshop in Virginia, USA, as a forum for standards users, researchers and implementers to share their experiences. Presentations and discussions at the workshop will also help shape the future of OMG standards.
www.omg.org/news/meetings/realtime2004/index.htm

Italian Perl Workshop

19-20 July: The Italian Perl Mongers and the Pisa.pm group are proud to announce the first Italian Perl Workshop. The Workshop is aimed at Perl users, professionals and hobbyists alike, to aid in the exchange of experiences and in the building of a stronger Perl community in Italy. The Workshop will be held in Pisa, at the Polo Fibonacci.
www.perl.it/workshop/index.html.en

Linux Symposium

21-24 July: The Linux Symposium, to be held in Ottawa, is a core technology conference, targeting software developers working on the Linux kernel, OS infrastructure, security, networking, and related research projects. With attendees coming from over 30 different countries, the Symposium is probably the single most comprehensive collection of Linux experts in the world.
www.linuxsymposium.org/2004/

OSCON 2004

26-30 June: Come to OSCON in Portland, USA, and meet Open Source leaders, learn useful skills, and engage in conversations with developers, business leaders, and technology strategists.
http://conferences.oreillynet.com

pSeries Technical University 2004

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www-306.ibm.com/services/learning/ites.wss?pageType=page&contentID=a0002560

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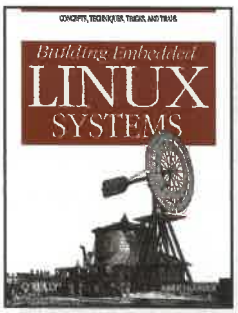
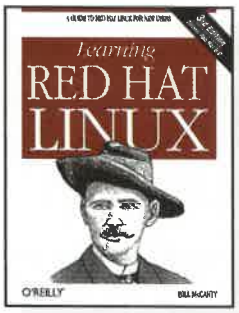
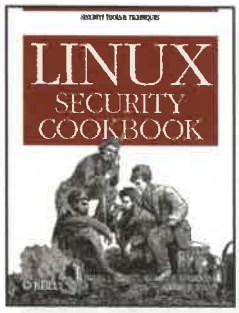


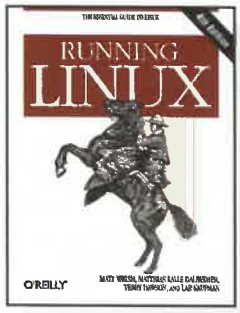
Building Embedded Linux systems
Karim Yaghmour
0-596-00222-X, £31.95



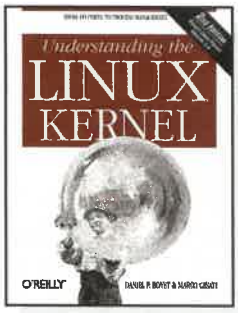
Learning Red Hat Linux, 3rd Edition
Bill McCarty
0-596-00469-9, £28.50



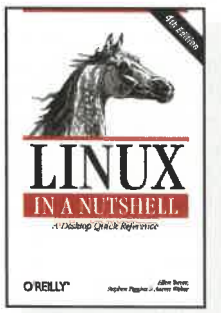
Linux Security Cookbook
Daniel J Barrett, Richard F Silverman & Robert G Byrnes
0-596-00391-9, £28.50



Running Linux, 4th Edition
Matt Welsh et al
0-596-00272-6, £31.95



Understanding the Linux Kernel, 2nd Edition
Daniel P Bovet & Marco Cesati
0-596-00213-0, £35.50



Linux in a Nutshell, 4th Edition
Ellen Siever et al
0-596-00482-6, £28.50

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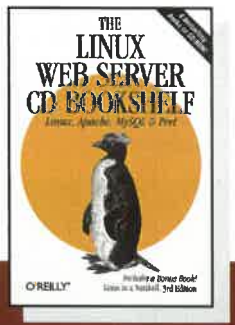

The Linux Web Server CD Bookshelf, V. 2.0
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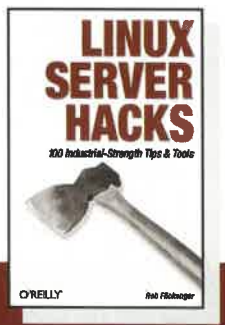

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V-days for the GPL

You wouldn't have known it from reading the mainstream press coverage, but the last few months have marked an epoch in the legal history of Free Software. The GPL has been the object of Microsoft-inspired attacks of every kind since Mr Gates and his colleagues woke up to its transformative power to remake the global software industry in a permanently unmonopolized image. Last month dissipated all the FUD that has been thrown at the GPL.

The myth that "the GPL has never been enforced in court and so we don't know whether it's valid" is exploded

First off, we entered the era of global GPL enforcement. Harald Welte and his counsel Till Jaeger secured German judicial enforcement of the GPL covering netfilter/iptables, in a dispute involving embedded use of Free Software in networking appliances. Thanks to Harald and Till, the myth that "the GPL has never been enforced in court and so we don't know whether it's valid" is exploded. Their victory also debunks recent speculation (fueled by a Microsoft-sponsored research report) that the GPL faced serious legal hurdles in the German courts.

Meanwhile, in the US courts, the most vociferous antagonist the GPL has ever attracted is beginning to abandon the fight. Almost a year ago SCO responded to IBM's GPL counterclaim in their ongoing litigation by pleading that the GPL violated, among other things, the United States Constitution and the Copyright Act. I repeatedly pointed out, in this column and elsewhere, that SCO's legal positions concerning the GPL were absurd and I confidently predicted that they would never be the basis of any court's conclusions of law.

But SCO's publicists routinely provided quotes from Darl McBride asserting that the GPL violated the American Way of Life. I debated Kevin McBride, Darl's brother and at that time SCO's legal philosopher in residence, before an audience of intellectual property lawyers in Los Angeles, and answered a speech of Darl's in an appearance at Harvard Law School. Criss-crossing the continent stamping out nonsense was growing tedious. And then – just as some independent academic lawyers, such as Professor David McGowan of the University of Minnesota Law School, were beginning to publish pieces declaring *ex cathedra* that I was right – SCO folded its tents and stole away. Filing a new pleading with the District Court, it abandoned its outlandish claims.

SCO folded its tents and stole away. Filing a new pleading with the District Court, it abandoned its outlandish claims

SCO will not give up entirely on its anti-GPL litigation position. It must continue to assert that the GPL is not violated by SCO's demand for license fees for use of the Linux kernel, which SCO itself has distributed under GPL. Otherwise SCO would be conceding, as IBM asserts, that it is intentionally infringing the copyrights of every contributor to the kernel. But SCO is no longer able to articulate even a plausible theory under which it can escape. Its broad general claims against the GPL have been universally recognized, even by SCO, as untenable.

The big news is that general recognition of the GPL's solidity, both in and out of court, is reducing uncertainty about the costs and benefits of adopting Free Software

Thus in two of the world's most important legal systems, the GPL has simultaneously and significantly triumphed. It might seem ironic at first sight that the formal legal victory occurred not in the litigious US but in Germany. The negotiation-focused strategy of the Free Software Foundation, however – which has largely determined the course of GPL-compliance activity in the US – is in fact complementary to the litigation-focused strategy adopted by the netfilter/iptables project, and by other development projects providing critical software components for appliance uses.

The real significance of this pair of developments lies not in the details of SCO's climbdown or netfilter's success. The big news is that general recognition of the GPL's solidity, both in and out of court, is reducing uncertainty about the costs and benefits of adopting Free Software for enterprise use. Microsoft has labored expensively to create that uncertainty, hoping that any delay in the corporate adoption of free software would buy it time. But, as the new developments show, the strategy of attacking the GPL has failed.

I can't very well say that I'm surprised. These results validate the basic legal engineering of the Free Software movement. One of the Free Software Foundation's most important commitments to the movement has been to provide a license that would protect software which is born free. We have delivered on our commitment and the GPL is proving its worth. The opponents of freedom will not give up, but our first and greatest bulwark of defense stands strong. Attacks against the license will continue, but with diminishing energy; the tide has turned. Other legal attacks on freedom are inevitable, and we will be ready for them. Like the software itself, the legal system with which we surround Free Software matters.

Eben Moglen is Professor of Law at Columbia University Law School and serves without fee as General Counsel of the Free Software Foundation

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During the last few years, the music industry has experienced a downturn in sales. The downturn is blamed on a technological revolution that makes it possible to download MP3s from anywhere in the world, and listen to them at one's own leisure. According to figures produced by the International Federation of the Phonographic Industry, global sales of recorded music during 2002 were down by 7% to US$32 billion. Curiously, this downturn coincided with a similar downturn in expenditure on IT products and services, which might suggest that prevailing economic conditions were the greatest influence on record sales.

The Internet is not the sole reason for the relative stagnation of the music industry. Music is no longer the dominant force in youth culture that it was during the record industry's heyday of the 60s and 70s. There are many other forms of entertainment. The mini boom that resulted from the replacement of vinyl with CDs during the 80s has subsided. The record industry is ignoring the reality that its primary market has always been among young adults, who invent their own crazes, and are not attracted by manufactured pop.

The true threat to the music industry is not piracy, but the realisation that the audience and producers of the music might not need the industry at all

The music that has appealed to the core audience during the last few years has been anonymous dance and trance music, the popularity of which probably owes more to Ecstacy than it does to the music industry, and which survives and thrives as a parallel culture outside the traditional outlets. Most of it is produced on home studios by independent artists and producers, which works against the tradition that the music industry understands – the star system, where a select few performers (who are sometimes musicians) make undreamt-of riches, and the great majority struggle to survive against the grain. The myth of rock music, of working class heroes and street fighting men, doesn't hold much water in a world where Elton John is a dame of the British Empire and Madonna seeks to exclude ramblers from the rolling acres of her English country estate.

Music is no longer the dominant force in youth culture that it was during the record industry's heyday of the 60s and 70s

The industry has always been rife with rags to riches and back to rags stories, a characteristic that it shares with another traditional meat for entertainment industry, boxing. Only the strong survive, and even Mohammed Ali, the greatest of them all, is the worse for wear. The truth about the content industries is that control of copyright has moved from the individual artist or performer to the corporate entity. Musicians do not own their product. The world of music is littered with the hard luck stories of musicians who sold millions, were spat out and and wound up with nothing. Courtney Love gives a succinct summary of the situation: "The system," she says, "is set up so almost nobody gets paid".

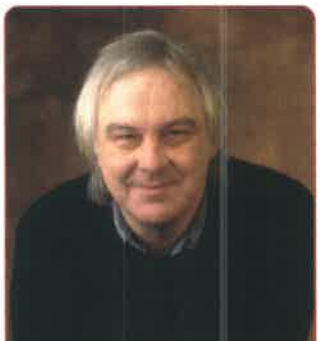
Piracy, Love contends, is "when the RIAA lobbies to change the bankruptcy law to make it more difficult for musicians to declare bankruptcy... the music industry is a US$40 billion-a-year business. One third of that revenue comes from the US. The annual sales of cassettes, CDs and video are larger than the gross national product of 80 countries. Americans have more CD players, radios and VCRs than bathtubs."

The truth about the content industries is that control of copyright has moved from the individual artist or performer to the corporate entity

Despite this, many of "the artists who have generated billions of dollars for an industry die broke and uncared for", though they are "the rightful owners, originators and performers of the original compositions. This is piracy." Love cites the modern examples of TLC and Toni Braxton, whose contracts left them bankrupt despite each generating worldwide sales of more than US$175 million.

During the last hundred years the music industry has been subject to continuous upheaval and change. The one constant has been the control of the distribution channels. The Internet offers alternative and unparalleled outlets for musicians and artists, to achieve what has not been achieved in 100 years of the record industry – control of the means of distribution. To publish a piece of music on the Internet costs very little. The true potential of the medium is to bypass the middleman altogether, to create a means of worldwide distribution with very few overheads. The true threat to the music industry is not piracy, but the realisation that the audience and producers of the music might not need the industry at all.

In recent months the industry has made tentative steps to catch up with its audience. At Napster or Tiscali, Virgin Megastores or MSN, you may pay for and download tracks by selected artists, but there are restrictions. You are welcome only if you run Windows Media Player. Linux users need not apply.



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Punch drunk

One great thing about the job of editing a computer magazine is reading various news-orientated websites. Browsing Slashdot, The Register or LinuxToday is considered skiving to most people – a quick break during a coding session – but I'm contractually obliged to do so. It's a hard life, I tell you.

This month it's Kenneth Brown whose door is being charged with a battering ram. If you've somehow missed this spectacular story, take a look at *News* on page 6, and *The Luddite*, page 51.

The gist is that Mr Brown has been making outrageous claims about Linux (the operating system, rather than just the kernel, although it's not clear he understands the difference). He's also made it somewhat personal by casting aspersions about the kernel's principle developer, Linus Torvalds.

Browsing Slashdot, The Register or LinuxToday is considered skiving to most people, but I'm contractually obliged to do so. It's a hard life, I tell you

What becomes very apparent to a professional news addict like me is the soap-opera nature of the Linux community. Here's how it works. A story breaks which is critical about Linux. Right on cue, an infinite number of geeks come out of woodwork and analyse the story until a bloody pulp is all that's left. They're armed with the geek equivalents of pitchforks and flaming torches – discussion forums, mailing lists and emails written in the strongest terms.

If the biteback from the community is particularly savage it can even make a Slashdot topic of its own but more frequently the original story is followed-up by interviews with the poor souls who made the comments in the first place. A little backpeddling takes place and the original point is clarified to take the feedback into account, but it's never enough to avoid yet more geek warcries.

Mr Brown can't believe Linus wrote the kernel. Despite an avalanche of criticism from virtually everybody he conducted "extensive interviews" with, he has persisted with his argument, using the world's press as a megaphone. As an exercise in FUD, it scores a six out of ten on my personal scale but loses marks for being unoriginal – we've seen the straw-man manoeuvre too much in the past.

As an exercise in FUD, it scores a six out of ten on my personal scale but loses marks for being unoriginal

It's like the suplex move in wrestling or a game of *Mornington Crescent* in *I'm Sorry I Haven't A Clue* – more than a little hackneyed.

In situations like these, I feel sorry for Linus. I just don't think the guy deserves this kind of criticism. Although his dealings with Red Hat in the dot.com era mean he's done quite well out of his creation, at the end of the day he's just a hacker who wants to get on with coding and is lucky enough to be able to do so.

And that's all there is to it. Although he sometimes acts as a public face for Linux, and has been known to respond to criticisms when prodded by journalists, he's never gone out of his way to be a salesman for Linux. Instead, Linus' stance has always been to allow people to come to Linux of their own accord and to discover it for themselves on their own terms.

Linus could have all kinds of control over Linux. But it's clearly not something he wants

His attitude is like that of a proud father. The Linux kernel is his grown-up offspring. He watches out for it on occasion and perhaps even worries about it from time to time, but mostly he asks that the world accepts it on its own merits and accept it for what it is.

Linus currently works for the Open Source Development Lab. He's actually employed by the organisation to code and project manage the kernel full time. You'll note there that he's *employed* by OSDL. He doesn't *run* OSDL and nor does he *own* OSDL.

This is an important distinction. Linus could have all kinds of control over Linux. But it's clearly not something he wants. He's just a happy hacker who is often caught blinking in the bright lights of fame but is happiest in the light of his VDU, tapping in code. One of the strange ironies of Linux is that if the whole corporate investment thing hadn't happened, and the kernel was still a geek curiosity, Linus' attitude and approach would probably be identical to what it is today.

At the end of the day, Linus neither invites or deserves the kind of criticism that Ken Brown (or anybody else) aims at him. Anybody trying to attack Linux faces a serious problem – the very people behind it adopt a take it or leave it attitude. They'd like you to use Linux, for sure, but it has to be your decision taken on your own terms. Linux is built upon freedom and this is its practical manifestation.

Just as Linux rewrites the rulebook within the IT industry, it also rewrites the rules of PR warfare. It's difficult for Mr Brown to win a fight when the quietly spoken Finnish chap is sitting in the corner and refusing to fight or even raise his gloves in defence. In that kind of situation, there's only one real loser.

Keir Thomas is Editor of *LinuxUser & Developer*

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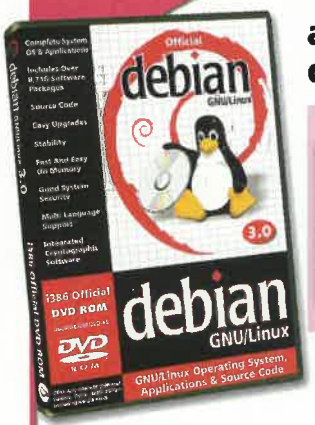

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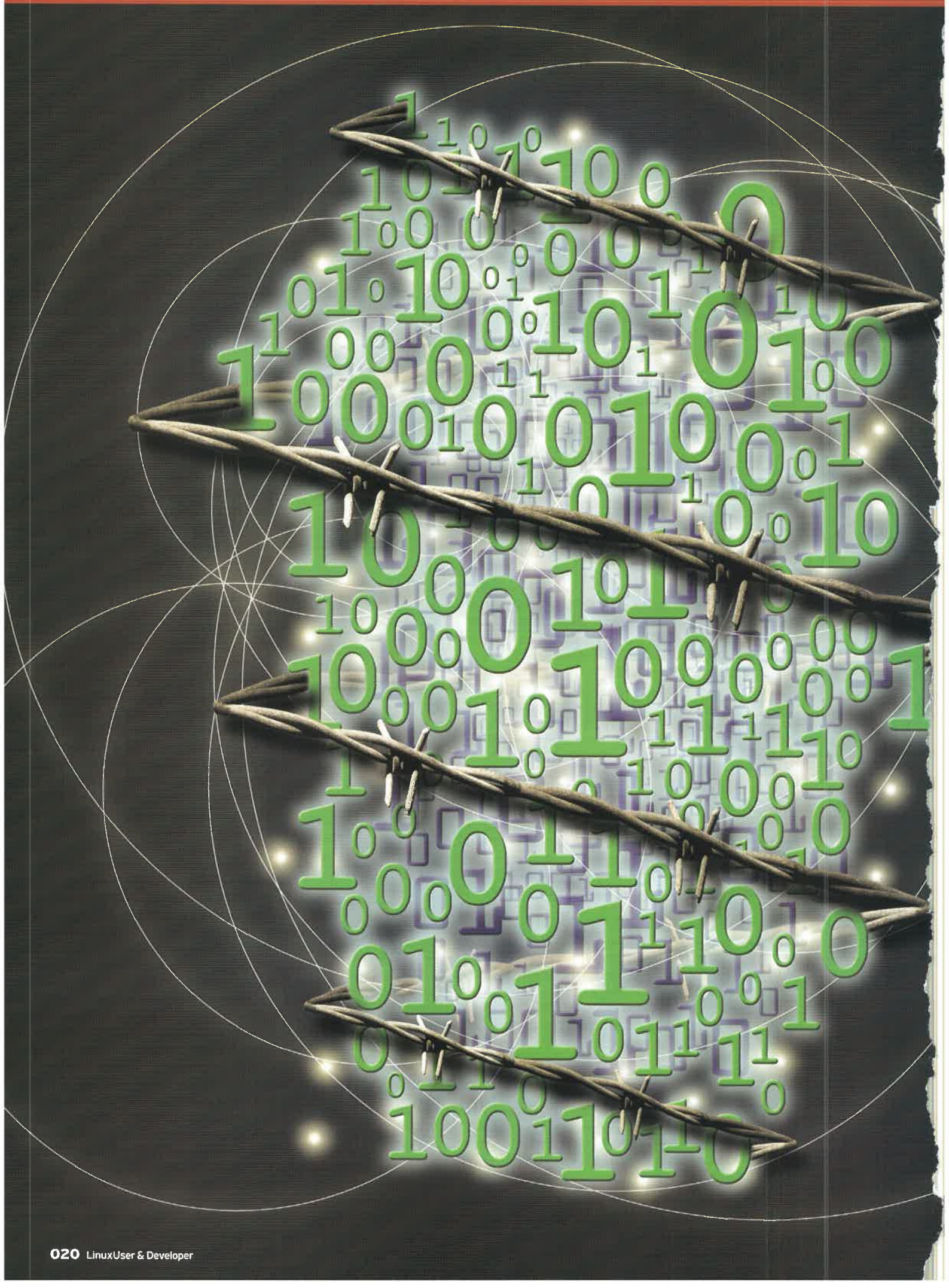


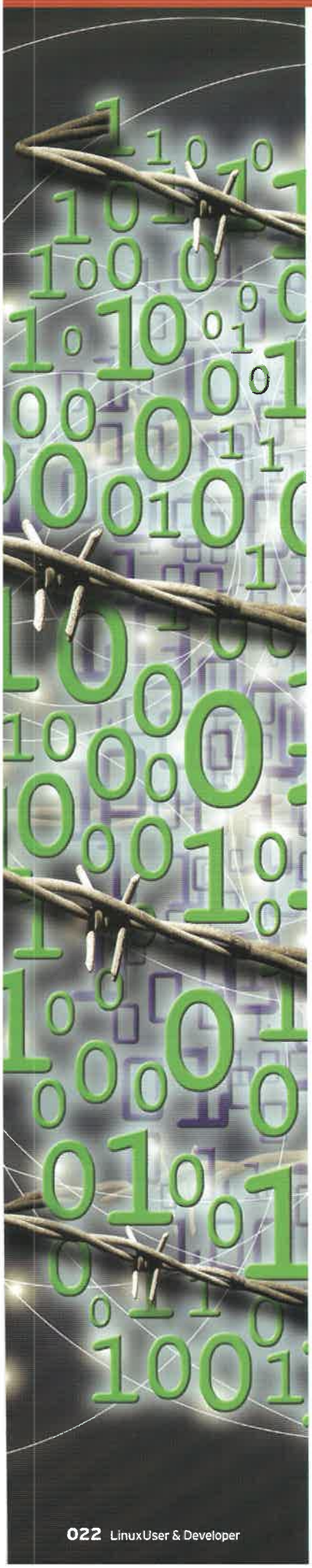
Patents kill innovation and are a tax on ideas, says Richard Hillesley, who explains what's at stake

Reverse mapping the patent tree

During the last few years, the United States has witnessed a proliferation of patents in industries that are central to the information economy. There is a consensus among economists and software engineers that the rush to patents and business models based on 'Intellectual Property Rights' will restrict the flow of information and inhibit innovation. In 1999, the United Nation Development Program's 'Human Development Report' came to the conclusion that: "The relentless march of intellectual property rights needs to be stopped and questioned", because of the regressive effects of patent law on health, trade and economies in the developing world.

Software evolved in a climate free of patents, but a relaxing of the rules by the United States Patent and Trademark Office (USPTO) has lowered the bar for patent claims. During the last two decades, thousands of patents have been issued on business methods, data structures and process descriptions that are neither uniquely original or take account of how software is developed.

Because software deals in language and the expression of ideas, code should be treated like the written word, which is subject to copyright. Patents on software are, in effect, a tax on ideas. We are obliged to search and exclude the idea that someone else may have claimed ownership to, or pay the price for having the same idea. Hartmut Pilch of the Foundation for a Free Information Infrastructure (FFII), notes that: "Advances in software are advances in abstraction. While traditional patents were for concrete and physical inventions, software patents cover ideas. Instead of patenting a specific mousetrap, you patent any 'means of trapping mammals' or 'means of trapping data in an emulated environment'. The fact that the universal logic device called a 'computer' is used for this does not constitute a limitation. When software is patentable, anything is patentable."



The European patent movement, an unholy alliance of civil servants, multinationals, and patent lawyers, is pressing tor the European parliament to bring European patent law into line with that of the United States. On September 24, 2003, the European Parliament voted to incorporate a set of amendments into the new patent Directive that defeated the objectives of the patent movement. These amendments clarified and reaffirmed the non-patentability of programming and business logic and upheld the right to freedom of publication and interoperation.

A "Working Party on Intellectual Property (Patents)" was charged with redrafting the amended Directive. The Working Party's membership is identical to the membership of the Administrative Council of the European Patent Office. The Working Party's "compromise document" rejects all the Parliament's clarifying amendments, reinstates the Commission's original proposal, and allows claims of patentability on computer programs.

The Irish Presidency of the European Union has surrendered to the lobbying of sectional interests and has referred the Directive back up to the "political" level, shorn of the Parliament's amendments. The Parliament has the option of rejecting the Directive outright, accepting it as it is, or insisting on the amendments for which it has previously voted. There is still time to inform and encourage your (incoming) MEP to vote in favour of the amendments.

OVER THE GLOBE

"If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.

"That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property.

"Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utility, but this may or may not be done, according to the will and convenience of the society, without claim or complaint from any body."
Thomas Jefferson, from a letter to Isaac McPherson, 1813

"When software is patentable, anything is patentable"
Hartmut Pilch

EXPRESSIONS OF SPEECH

A patent is the formal and legal description of an invention. The possession of a patent gives the owner the legal right to exclude anyone else from making, using or selling the invention for a period of twenty years, and therefore confers the right to the patent holder to stifle competition. To be patentable, an invention must fulfill three basic criteria: the invention must demonstrate utility, have novelty, and be non-obvious. The patent holder has no obligation to utilise his or her invention, but can sit and wait to take opportunistic advantage of the unwitting infringement of the patent by third parties. In the current climate in the United States, so many software patents are issued on business methods, data structures and process descriptions that it would be difficult not to infringe one software patent or another every time one sits down to write a useful piece of code.

TO MAKE APPARENT

A patent confers a monopoly on an invention, idea or product for a given period of time (usually 20 years), with the notion that this protects the inventor from appropriation of his or her invention, and allows the invention to be released into the public realm to increase the potential for the dissemination of ideas. The word patent is Latin in origin and derives from the Latin verb meaning "to lie open", or make apparent. The practice of issuing patents on inventions probably originated in medieval Venice where local glass makers used patents to protect their special skills and knowledge from exploitation by others.

Patents have been part of British law since the 15th century when Letters Patent were granted as favours from the Crown, and have always been subject to controversy and charges of abuse. In 1610, after widespread protests at the issuing of patent monopolies for such daily necessities as salt, oils, vinegar, starch and saltpeter, James I was forced to revoke all existing patents.

"The patentees had extensive powers of control. They could search the premises of alleged infringers and seize their goods. These powers were frequently exercised with considerable violence, high-handedness and irresponsibility, and they intensified the popular resentment against the entire system." (E Penrose – 'The Economics of the International Patent System', 1951).

By 1623, pressure from the House of Commons and the courts led to the passing of the Statute of Monopolies, under which monopolies were declared to be void under common law, except in the case of patents on inventions. The Statute of Monopolies, founded on this contradiction, is the basis of modern patent law.

Software uses language as a means of interacting with the millions of on and off switches that comprise a computer. The sets of instructions that are contained in a computer language, or any other computer program, rely on basic structures that are common to all computer languages, and have evolved over half a century of shared development.

Perhaps the most compelling argument against patents for software, as for all knowledge based industries, is that invention and innovation in software is cumulative, and depends entirely on the efforts of others who have gone before, and that this will continue to be the case with every small development in the field of software engineering. Good programmers invent new processes every day, and other good programmers use these processes to make further inventions. That is, and always has been, the nature of the job. To assign patents to these small inventions, which are effectively expressions of speech, is to stop innovation in its tracks.

A succinct expression of this truth was provided by Bill Gates in a Microsoft internal 'Challenges and Strategy' memo, dated May 16,1991. "

If people had understood how patents would be granted when most of today's ideas were invented and had taken out patents", he wrote, "the industry would be at a complete stand-still today". Rather more revealingly, Gates concluded that the "solution" to the problem of patents was "patenting as much as we can... A future start-up with no patents of its own will be forced to pay whatever price the giants choose to impose. That price might be high: Established companies have an interest in excluding future competitors."

As Lawrence Lessig has noted: "Here's perhaps the most concise and compelling account of just why software patents will harm new innovators (that's you Europe) and benefit old innovators (that's America)."

THE LANGUAGE OF SOFTWARE

The theoretical justification for patents, like the justification for copyright law, is that they protect the "little man", the inventor or creator, from the predatory instincts of larger commercial entities, and such protection is of ultimate benefit to the community. A wider justification is that patents encourage innovation, and the propagation of new ideas and inventions, and spread knowledge of new inventions for the greater good of all. Such a view could be described as the common wisdom, so it is

Most companies ignore the patent industry as an unnecessary and expensive diversion - technology moves too fast, and it is more important to be quick on your feet

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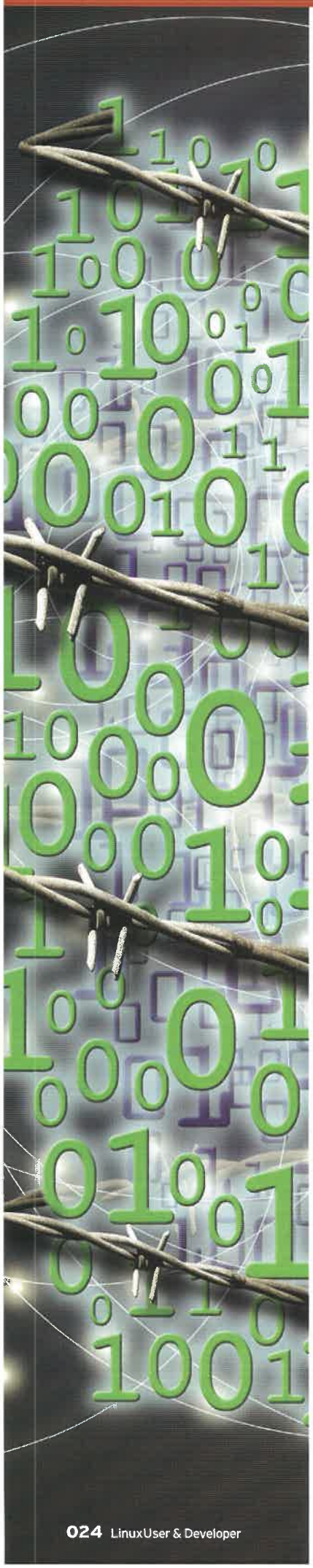

revealing to discover that research does not substantiate this assumption.

Every economic study into the efficacy of software patents, including those ordered by the European Commission and by member state governments, has come to the same conclusion.

work. Patents prohibit the proper use of the common language of software.

Patents have always been subject to controversy. Most invention relies on previous discovery, and many inventions are made concurrently by different individuals in different

but his defiant use of the patent system to prevent others from exploiting the potential of his ideas, hindered progress.

According to T.S.Ashton in his 'Economic History of England': "Watt refused applications for licenses to make engines under his patent: he discouraged

"There is no doubt that software patents tie us in knots. If there's no clear and vital public need to tie us up in bureaucracy, untie us and let us get back to work!" Richard Stallman

Software patents are of secondary importance as a means of deriving returns from R&D investment. The main drivers of competitive advantage are copyright, trade secret, complexity, network effects and the ability to react quickly to customer needs. Software is best protected by copyright, which can effectively prohibit the appropriation of somebody else's

countries. The invention of the electric light bulb was claimed by at least three individuals who had equal and valid right to claim prior invention. James Watt, the most famous inventor of the late eighteenth century, made developments on the earlier work of Newcommen and others. Watt's inventions made the Industrial Revolution possible,

experiments by Murdoch with locomotive models; he was hostile to the use of steam at high pressure; and the authority he wielded was such as to clog engineering enterprise for more than a generation. If his monopoly had been allowed to expire in 1783 England might have had railways earlier. If a similar privilege had been extended to Arkwright –

THE BROKEN IF

"Software is like other fields of engineering in many ways. But there is a fundamental difference: computer programs are built out of ideal mathematical objects. A program always does exactly what it says. You can build a castle in the air supported by a line of zero thickness, and it will stay up.

"Physical machinery isn't so predictable, because physical objects are quirky. If a program says to count the numbers from one to a thousand, it will do exactly that. If you build the counter out of machinery, a belt might slip and count the number 58 twice, or a truck might go by outside and you'll skip 572. These problems make designing reliable physical machinery very hard.

"When we programmers put a while statement inside an if statement, we don't have to worry about whether the while statement will run such a long time that it will burn out the if statement, or that it will rub against the if statement and wear it out. We don't have to worry that it will vibrate at the wrong speed and the if statement will resonate and crack. We don't have to worry about physical replacement of the broken if statement. We don't have to worry about whether the if statement can deliver enough current to the while statement without a voltage drop. There are many problems of hardware design that we don't have to worry about.

"The result is that software is far easier to design, per component, than hardware. This is why designers today use software rather than hardware wherever they can. This is also why teams of a few people often develop computer programs of tremendous complexity.

"People naively say to me, 'If your program is innovative, then won't you get the patent?' This question assumes that one product goes with one patent.

"In some fields, such as pharmaceuticals, patents often work that way. Software is at the opposite extreme: a typical patent covers many dissimilar programs and even an innovative program is likely to infringe many patents.

"That's because a substantial program must combine a large number of different techniques, and implement many features. Even if a few are new inventions, that still leaves plenty that are not. Each technique or feature less than two decades old is likely to be patented already by someone else. Whether it is actually patented is a matter of luck.

"I've explained how patents impede progress. Do they also encourage it?

"Patents may encourage a few people to look for new ideas to patent. This isn't a big help because we had plenty of innovation without patents. (Look at the journals and advertisements of 1980 and you'll see.) New ideas are not the limiting factor for progress in our field. The hard job in software is developing large systems.

"People developing systems have new ideas from time to time. Naturally they use these ideas. Before patents, they published the ideas too, for kudos. As long as we have a lot of software development, we will have a steady flow of new published ideas.

"The patent system impedes development. It makes us ask, for each design decision, 'Will we get sued?' And the answer is a matter of luck. This leads to more expensive development and less of it.

"With less development, programmers will have fewer ideas along the way. Patents can actually reduce the number of patentable ideas that are published.

Excerpts from Richard Stallman's Testimony to the USPTO Hearings, 1994

if, indeed, his wide patents had not been annulled in 1781-5 – it is at least possible that a dead hand might have rested on the cotton industry also, and that forces tending to raise the standard of life of the poor would have been stifled."

FROM THE HORSE'S MOUTH

If necessity is the mother of invention, patents are its delinquent offspring, providing stumbling blocks to innovation and progress. The patent industry is a field dominated by lawyers. The prime beneficiaries are the large companies, the corporates that can afford to prosecute licences on their patent monopolies, and the lawyers who are employed to enforce them. The common view that patents are probably a good thing, and protect the rights of the individual against the greater forces of industry, is less than complete. Most companies and individuals ignore the patent industry as an unnecessary and expensive diversion – technology moves too fast, and it is more important to be quick on your feet. A small minority of organisations in a limited range of industries use patent monopolies as a revenue stream, guaranteed by an elite phalanx of lawyers who know their way around the system, as a means to inhibit competition, or as a protective mechanism to deter litigation from other patent holders. In all the consultations undertaken by the European and UK Patent Offices, the vast majority of individual respondents, software engineers, programmers, and SMEs, have advised against the patentability of software. The proponents have been more or less exclusively restricted to the representatives of multinationals, and/or the employees of the patent industry.

In 2002, Robert Barr, vice president and worldwide patent counsel for Cisco Systems, told the hearings of the US Federal Trade Commission on "Competition and Intellectual Property Law and Policy in the Knowledge Based Economy" that: "Patents have not been a positive force in stimulating innovation at Cisco. Competition has been the motivator; bringing new products to market in a timely manner is critical. Everything we have done to create new products would have been done even if we could not obtain patents on the

I OWN THE STARS

"How is it possible for one to own the stars?"
"To whom do they belong?" the businessman retorted, peevishly.
"I don't know. To nobody."
"Then they belong to me, because I was the first person to think of it."
"Is that all that is necessary?"
"Certainly. When you find a diamond that belongs to nobody, it is yours. When you discover an island that belongs to nobody, it is yours. When you get an idea before any one else, you take out a patent on it: it is yours. So with me: I own the stars, because nobody else before me ever thought of owning them."
Antoine de Saint-Exupery, 'The Little Prince'

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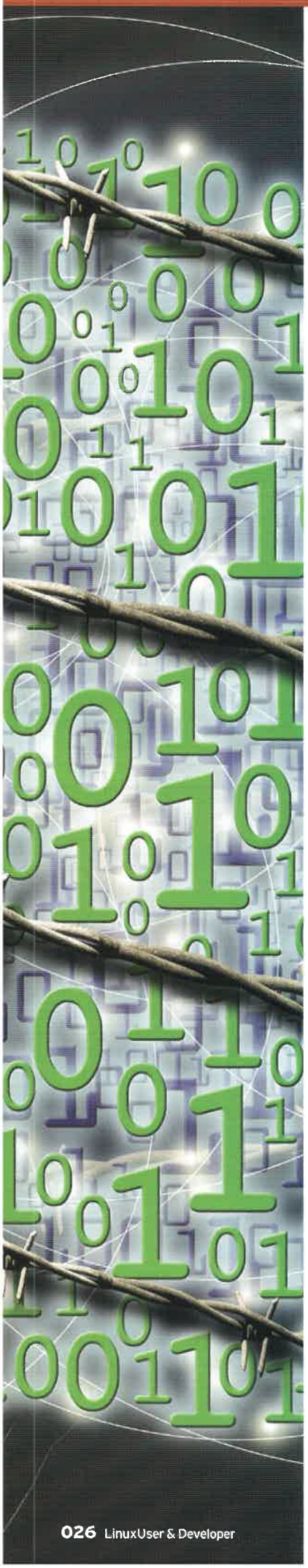


innovations and inventions contained in these products. I know this because no-one has ever asked me: 'Can we patent this?' before deciding whether to invest time and resources into product development."

According to Barr: "It makes more business sense to assume that, despite the fact that we do not copy other company's products, and despite the fact that we do not derive solutions to problems from the patent literature, we will be accused of patent infringement. The only practical response to this problem of unintentional and sometimes unavoidable patent infringement is to file hundreds of patents each year ourselves, so that we can have something to bring to the table in cross-licensing negotiations. In other words, the only rational response to the large number of patents in our field is to contribute to it... The patent system does not exist to protect the rights of inventors, or any particular interest group. It doesn't exist to protect what we now call 'intellectual property'."

We are obliged to search and exclude the idea that someone else may have claimed ownership to, or pay the price for having the same idea

The patent system came into being "to protect the progress of science and the useful arts," Barr told the Commission, "but in my experience at Cisco and my prior experience representing a variety of companies, the negative effects of stockpiling patents, the consequences of innocent infringement through independent development, the cost of proving noninfringement or invalidity through patent litigation, and the exploitation of the patent system as a revenue generating tool in its own right, have hindered true innovation and have outweighed the benefits."

WRITING SYMPHONIES

Applying for a patent is a lengthy and costly business. The patent application is drafted and enforced by patent lawyers, and patent databases have to be searched for conflicting patents, an act that even patent officials acknowledge requires the expertise of a patent lawyer. Even then, a patent is useless if prior art exists – proving prior art, or for that matter, defending a patent, is another expensive exercise – so those threatened with transgressing a patent will often pay up because it is the easiest option, not because it is right. Contesting a patent, even when justified, is seldom cost-effective, so patents have become the preserve of those that can afford the indulgence, and an effective instrument for impeding innovation and effective competition in many areas of industry.

The last person to benefit is "the little man", and the concept of intellectual property is little more than a connivance to ensure that invention remains in the ownership of the big players. Pilch contends that: "Programming is similar to writing symphonies. When a programmer writes software, he weaves together thousands of ideas (algorithms or calculation rules) into a copyrighted work. Usually some of the ideas in the programmer's work will be new and non-obvious according to the (inherently low) standards of the patent system. When many such ideas are patented, it becomes impossible to write software without infringing on patents. Software authors are in effect deprived of their copyright assets; they live under permanent threat of being blackmailed by holders of large patent portfolios. As a result, less software is written and fewer new ideas appear."

BACK TO WORK

The patent industry, the lawyers, the patent offices and the revenue earners, have a vested interest in expanding the patent market to cover areas way beyond the original remit of protecting and promoting innovation and invention. Traditionally, patents applied to physical innovations, the machines that changed our lives. Scientific knowledge and research was open to free exchange, but the patent industry views knowledge as intellectual property, and intellectual property as a marketable commodity.

While it is possible to understand a patent applied to a distinctive mechanical invention, it is more difficult to understand how generic knowledge, the human gene for instance, can be privatised, patented and licensed. The discovery and identification of a particular human gene is the end result of cumulative research by thousands of individuals who have contributed to the bank of knowledge that has made the final discovery possible. Should each stage of this research be made patentable, and if so, would the same discovery have been made in the first place? As for the human gene, so for software. Software patents should be of concern to all software developers, because it is impossible to say that in writing any piece of software one has not stumbled upon a technique, a building block, or methodology that has been used and patented before.

In 1994, Richard Stallman told the USPTO hearings, "A decade ago, the field of software functioned without patents. Without patents, it produced innovations such as windows, virtual reality, spreadsheets, and networks. And because of the absence of patents, programmers could develop software using these innovations. We did not ask for the change that was imposed on us. There is no doubt that software patents tie us in knots. If there's no clear and vital public need to tie us up in bureaucracy, untie us and let us get back to work!"

KEY LINKS

Foundation for a Free Information Infrastructure:
www.ffii.org
FFII UK:
www.ffii.org.uk
UK Patent Office:
www.patent.gov.uk
EuroLinux Alliance:
www.eurolinux.org
Software patents - assorted examples:
http://swpat.ffii.org/patents/samples/index.en.html
Microsoft patents since 1996:
http://de.vivisimo.com/search?v:file=Microsoft

SOFTWARE PATENTS
MAKING THE DIFFERENCE

In January 2001, the UK Patent Office (UKPO) called for participation by software professionals in a consultation on UK policy towards software and business method patents. An overwhelming majority of the respondents came out strongly against the patenting of software and of business processes. In a press release dated 12 March 2001, e-Minister Patricia Hewitt made an unequivocal statement of the government s policy: "The majority of those who responded agree with the Government and oppose patents for ways of doing business on the Internet."

The press release summarised the key conclusions of the consultation as follows: "There should be no significant change to the patentability of software; the law is not clear enough. Urgent European action to clarify is needed; and business methods should remain unpatentable."

The conclusions themselves are couched in moderate tones and would suggest a policy that concurred with the stated views of both the e-Minister and the vast majority of respondents to the consultation, broadly against the extension of patents to software and business methods. Conveniently, however, the wording of the press release passed UKPO responsibility for future policy decisions to Europe. In the European consultations the UKPO's position has been to argue for the "status quo" as it is in Britain, where patents on software "inventions" have been granted for the last 20 years.

The UKPO has pushed more than any other for the adoption of the European directive entitled "On the patentability of computer implemented inventions", and for the clauses therein (as expressed at the European Council Intellectual Property and Patents Working Group meeting of 13 June 2002).

EEtimes carried an interview in September 2001, with Peter Hayward, head of the Patent Office's electrical division, in which he warned that "a decision is urgently needed [from the EPC] because the US has already recognised software patents and even business method patents", and the EPC "provides no guidance on the validity of these concepts... While this gulf persists, there is some confusion over what software patents can be sought and enforced." Hayward threatened: "If it does not happen, we will attempt to clarify European law by other routes".

When it was suggested that some companies have called for an alternative protection mechanism for software other than patents, Hayward claimed: "Most are against it. People say software has a short lifetime but a lot of the basic principles go on for a long time."

The sensible alternative to the patentability of software is copyright, which is unambiguous and does not confer arbitrary monopolies on mathematical techniques and vague business methodologies. The argument that "most are against it" is, to say the least, contentious. Software patents are opposed by SMEs, software houses, professionals and academics from every corner of the computing industry, and for very good reasons. Software patents stifle innovation and competition and offend common sense. The advocates of software patents are seldom those who understand or write the software, who know the intricacies of the code and how it gets that way.

THE CURRENT SITUATION

The European Commission proposed a directive on patents which, though claiming to exclude "pure software" from patentability, has been widely criticised for doing the opposite and allowing software patents almost without limitation. Against expectations, in September 2003 the European Parliament amended the directive to introduce limitations to the patentability of software, and in favour of common sense. The Parliament's amendments clarified and reaffirmed the non-patentability of programming and business logic and upheld the right to freedom of publication and interoperation.

A "Working Party on Intellectual Property (Patents)" was charged with redrafting the amended Directive. The Working Party's membership is identical to the membership of the Administrative Council of the European Patent Office. The Working Party's "compromise document" rejects all the Parliament's clarifying amendments, reinstates the Commission's original proposal, and allows claims of patentability on computer programs.

The Irish Presidency of the European Union has surrendered to the lobbying of sectional interests, and has referred the Directive back up to the "political" level, shorn of the amendments. The Parliament has the option of rejecting the Directive outright, accepting it as it is, or insisting on the amendments for which it has previously voted.

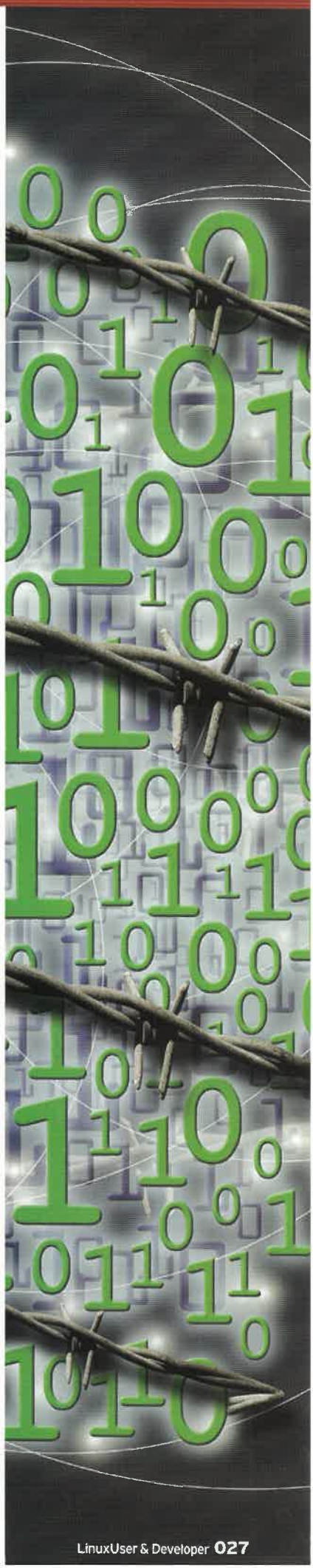
WHAT YOU CAN DO

Write to your MP (or use http://faxyourmp.com) and your MEPs. You might want to say that you are against software patents, and that you support the amendments to the proposed directive (on "patentability of computer-implemented inventions" made by the European Paarliament which restrict patentability. If you can write as a business, or as a software professional, your opinion will carry more weight.

Few politicians are software experts. Most do not know about software patents and will listen to their constituents' views. Enough people expressing concern will sway the political argument.

KEY LINKS

Fax your MP
www.faxyourmp.com
The European Parliament's amendments:
www.ffii.org.uk/texts/side_en.html



Red Hat invented the commercial Linux distro but, reports Jono Bacon, it's recently been under fire from many different directions

Under the brim

Red Hat is synonymous with Linux and Linux is synonymous with Red Hat. Not only has the North Carolina-based organisation grown to a 700+ employee base across 22 offices, but Red Hat has successfully managed to develop a real and marketable brand in an industry that didn't exist just a few years ago.

Such brand value has given Red Hat the ability to push itself as a real player in the enterprise market, a player with the ambition and products to back itself up. With publicised wins for Red Hat including Fiat Link, First Trust, Kenwood and the US Army, it is evident that it still very much means business. But it's not been without criticism and the Red Hat of today faces some of the most important challenges in its history.

By the time the company released version 4.2 of its distro in July 1997, it had developed a reputation for creating the easiest distribution to set up and configure

HUMBLE BEGINNINGS

Red Hat started out as a small Linux distribution released by Mark Ewing. With the first few releases, Red Hat gained some interest from the then-tiny Linux community. Bob Young, the founder of the AAC Free Software catalogue (and publisher of a newsletter called New York UNIX) was selling copies of Linux at the time and making a reasonable profit.

Young had heard many good things about Ewing and in particular the work Ewing was doing on the RPM package management system. A conversation struck up between the parties. It was established that Young needed to secure some form of branding and assets, so the decision was made to merge the two companies. Young purchased the brand, copyrights and trademarks of Red Hat in exchange for shares in AAC. One year later, the sales and administration wing of Red Hat was in full flow in North Carolina and the company was poised to attack the market.

Things went from strength to strength. Back in those heady days of Linux, it was not uncommon for a Linux user to spend a week grappling with the finer points of modem configuration. Such fundamental failings were a real problem and something that Red Hat was eager to assist with. By the time the company released version 4.2 of its distro in July 1997, it had developed a reputation for creating the easiest distribution to set up and configure. Red Hat was well on the way to developing its reputation within the industry it serviced, but the true challenge was in approaching other industries.

Bob Young was fully aware that his little Red Hat could not

realistically take on the monopoly that was Microsoft. Young's contribution to the O'Reilly Open Sources book (www.oreilly.com/catalog/opensources/book/young.html) demonstrates his maturity of thinking at the time.

"You can't compete with a monopoly by playing the game by the monopolist's rules," Young is quoted as saying. "The monopoly has the resources, the distribution channels, the R&D resources; in short, they just have too many strengths. You compete with a monopoly by changing the rules of the game into a set that favours your strengths."

Young was clearly aware of the market and the challenges, but how would Red Hat fare?

DEFINING THE MARKET

Those with a knowledge of the general make up of Red Hat are aware of its desire for enterprise adoption. From the outset, it seemed clear that Red Hat had a very focussed branding schema and strategy when selling its products and services.

Upon the release of Red Hat 5.0, the community saw a substantial 'beefing up' of the Red Hat brand and image. All of the staple ingredients were present, each packaged to the hilt with the parlance of the business driven sector.

Fully professional and buzz-word compliant, Red Hat gained an image that was similar to that of companies that have been servicing the computing sector since the late Eighties. The change was impressive for the indiscriminate observer, but for the Red Hat versus Linux debater it was somewhat cheeky. Red Hat was elevating itself to a higher plateau, but who could blame it? It had the drive, resources and enthusiasm to take on this sector, and it did.

Things changed in November 2003. The world had always envisaged Red Hat as a two-tier organisation that serviced both enterprise and consumer markets, and Red Hat had typically marketed its consultancy and software development services at the enterprise brigade but had sold boxed sets of Red Hat Linux in consumer markets. This was in the hope that the oft-promised revolution of Windows users switching to Linux would happen.

However, despite the huge rate of growth of Linux popularity and adoption, Red Hat was obviously servicing a sector that was not profitable. Part of the problem was that the enterprise and consumer products were intrinsically linked, but linked in a way that prevented practical commercial exploitation of the former.

On the other hand, the problem facing Red Hat enterprise customers was maintenance. It was not uncommon to see a new Red Hat release every six months and this was torturing administrators. Most network managers wanted to roll out Red Hat on its servers and desktops and simply forget about it for at least a year or so before upgrades were required. With the Red Hat Linux product line, upgrades were more frequent and, as such, more costly to implement due to staff time.

Red Hat announced in November 2003 that it was ceasing support of its Red Hat Linux distribution and was instead focussing on its Red Hat Enterprise Linux range of products. The enterprise underbelly of Red Hat had become the priority and it had been made official. Despite the fact that Red Hat could have killed off Red Hat Linux, the company took the admirable move of providing resources and facilities to allow the community adoption of the rebranded Red Hat Linux now known as Fedora.

Fully professional and buzz-word compliant, Red Hat gained an image that was similar to that of companies that have been servicing the computing sector since the late Eighties

Szuliks comment suggests that Red Hat is actually in the core business of getting software to people efficiently

CRITICAL COMMENTS

The difficulty Red Hat faced with Fedora was in the creation a truly unique product.

"In the past several years, customers have had limited options with the proprietary software incumbents," says Matthew Szulik, President of Red Hat. "Red Hat is not only changing the industry by providing Open Source as a high value, high-performance alternative, but we also have changed the way customers obtain software by providing software as a service."

Szuliks comment suggests that Red Hat is actually in the core business of getting software to people efficiently. But how is Red Hat's service unique and not just another generic Linux service from a distributor?

"Red Hat's been in the Open Source business for more than a decade," responds Szulik. "Unlike others now entering the market, our core business strategy is based on Open Source. We are trusted by the community and customers for having this pure strategy instead of adopting a hybrid model that limits contribution and innovation."

Szulik's rather vague response might indicate that Red Hat's unique angle is that it's a purer company that doesn't resort to closing off certain technologies. Critics might infer that this could be an excuse for not being innovative, but experience suggests that Red Hat focusses directly on the key features and products that are important to its strategy. However, Red Hat could easily face a stiff challenge when a competitor produces a more innovative product that grabs the attention of the world.

Red Hat could be damaged by such an occurrence, largely because it's already weakened in the eyes of many. When it decided to move to the singular focussed enterprise range of products, it angered a number of observers and customers. There have certainly been some well-publicised horror stories.

John Robb, a senior software developer at a biotechnology firm, expressed his concerns on the Eweek IT news site.

"[Red Hat] basically ruined its name in certain corporate circles, or at least in ours," Robb is quoted as saying. "You see, we worked really hard to convince management that we should use Red Hat – or any well-supported, free-as-in-libre OS. [We said] that it was a safe bet, that we could purchase security updates and apply them to this server in a timely manner. They didn't care how inexpensive it was, just that it would be there when we needed it. My colleague and I thought we had this thing beat with Red Hat and Red Hat Network."

Robb goes on to explain how the problems came directly from Red Hat's decisions.

"So, we get this really expensive machine from Dell with Red Hat SMP installed. I immediately registered the box with RHN and signed up for a year of support. Red Hat happily took the money even though they only were going to support the distro for another couple of

Matthew Szulik faces some hefty challenges as he takes Red Hat into the new world of enterprise Linux

always balanced the two contrasting cultures – business and hackers – rather well. It has remained a key contributor to a variety of Linux and Free Software projects, as well as resisting moves that would result in a true PR disaster (such as patenting arbitrary technologies or taking legal action against the community).

Red Hat seems to have retained a mutual respect with the Linux community through the years. Some of the people at the extreme of each side may not be happy, but it seems that most are generally satisfied with Red Hat's ethical stance on its software. Yet negative customer reports such as John Robb's are a different ball game. The best ethics in the world can't cover-up real world practicalities like bad customer support.

This is pertinent because the enterprise field is getting more and more crowded, and companies such as Novell and Sun are vying to steal some of the thunder that Red Hat has been drumming up. These are difficult times for the company and the money that Novell in particular can throw at Linux is substantial.

This has meant that Red Hat has faced some stiff competition in different sectors of the industry. One such sector is the corporate desktop. This has resulted in the creation of the Red Hat Corporate Desktop product that was launched recently. The Desktop product has not only created a large amount of press within the Linux community, but the soapbox clairvoyants have cited this product as evidence that 2004 will be the year of desktop Linux adoption.

months – this arrives at the heart of what they did wrong. Then we get the news that Red Hat was dropping support and I had to explain to management what had happened and why we now had to figure out support for ourselves. This was prior to Progeny getting in on the act, [although] by the time they did, it was too late. To make this short, the project died right there. Every bad thing management had heard about FOSS [Free and Open Source software] had come true."

Corporate Linux advocates have spent literally years persuading their management to move over to the Linux platform. Many put their jobs on the line due to their faith in the OS and the organisations that support it. For such a prominent Linux company to fail a consumer in such a way not only lets down Red Hat, it lets down the movement.

The competition might be stronger than Red Hat can handle

PAVING THE WAY

But isn't this simply par for the course? Ever since the early hackers paved the way for Free Software to make its mark, there has been a certain level of criticism levelled at all organisations that attempt to glean commercial gain from a cultural foundation that believes in freedom, both in terms of free as in beer as well as in speech.

Such tension has always been bubbling under the surface, often fuelled by purists who see any commercialisation of Linux as a Bad Thing. But Red Hat has

To many though, it seems clear why Red Hat has chosen to release such a product – it already has a desktop technology (Fedora), it already has an enterprise technology (Red Hat Enterprise), and it has the brand as well as the resources.

Competition might be stronger than Red Hat can handle, however. Novell purchased the GNOME-friendly software house Ximian and then

purchased the highly regarded Linux distributor SUSE. It doesn't take a genius to figure out where Novell is heading.

Red Hat has the competitive advantage in that its technology was already in existence and this appears to be the reason why the news of the Red Hat Desktop came out of the blue. But Szulik is quick to clarify his company's approach to the desktop.

"The audience for Fedora is vastly different than the target market for our desktop solution," he says. "Fedora features the latest innovations from the community. It is released with great frequency. Features that mature within Fedora may then be added to our enterprise versions. Red Hat Desktop is based on Red Hat Enterprise Linux and has the same release cycle and application compatibility as the other solutions in our enterprise line."

Szulik continues with unabashed enthusiasm. "We see tremendous opportunity for Red Hat desktop," he says. "Customers are increasingly seeking an affordable, manageable, secure alternative for basic operations such as browsing, office productivity and mail. We've got a very competitive option now."

BALANCING BUSINESS

The challenge for companies such as Red Hat is in how it interfaces with its customers, its investors and the Linux community. The balancing act is made all the more difficult because, historically, everybody and everyone has come to expect something from Red Hat. Customers want a low-cost, good-quality service, investors want a good return on investment and the community wants all of the above to be ethically sound. How can Red Hat manage this balancing act?

Perhaps part of the solution is investing energies in the people that drive the business. Red Hat has invested in the Open Source community and its business commercially, and is are also investing in its customers. Part of the battle is in ensuring that customers are using technology that means something and this ideology is typically backed up by certification schemes to create a source of experts in a particular technology. Red Hat has been forthcoming with its Red Hat Certified Engineer (RHCE) programme.

The RHCE courses are fairly comprehensive in the subjects that they cover, but they face a very real threat – relevance. Although Red Hat has developed a strong brand, people are only going to study the courses if there is some kind of commercial benefit for them. This may involve employment opportunities or some form of job security. What are Szulik's thoughts about obtaining the probability of achieving this peace of mind with the RHCE courses?

"Consistent with our strategy to provide solutions to customers to construct reliable open source architectures," he says, "Red Hat will work to enable organisations to develop in-depth in-house expertise to build, manage and maintain Open Source architectures. As Open Source moves into other parts of critical business infrastructure, Red Hat will adapt to provide learning services to meet the growing needs of our customers."

Once again, critics might suggest that he's avoided answering the question, but a little corporate translation suggests Szulik is saying that as Linux finds increasing use in business, the RHCE course will adapt to bring in any relevant topics.

Ever since the early hackers paved the way for Free Software to make its mark, there has been a certain level of criticism levelled at all organisations that attempt to glean commercial gain

CONCLUSION

Red Hat faces serious challenges. Whilst it's faced down much worst in the past, it could always rely on its brand. But the world of Linux has changed and the value of that Red Hat graphic is no longer enough, especially when faced with other corporate entities with equal marketing power. It might even be argued that Red Hat is seen as part of the older establishment, rather than the new world brought about by Novell's serious investment.

Since the early days of Red Hat's evolution, the company has proved to the world that it can create inspiring technologies and back up its products with the services and support required. But with the Linux industry maturing, innovation is required. A few years back, Red Hat and SUSE targeted the enterprise market, Mandrake handled the desktop market, Yellow Dog serviced the Mac market and TurboLinux/Conectiva had its own regional markets. Since then, Sun, Novell and IBM have climbed on board the bandwaggon and Red Hat is no longer in the driving seat.

The challenge of innovating in an open industry is open to each of the organisations involved. It will be intriguing to see how the next part of the Red Hat story will unfold.

Samuel Palmer takes a look at Rackspace, the multinational hosting company that has always provided a good home for Linux

God gave us Linux

The origins of Rackspace, the managed hosting company that has offices in San Antonio (Texas) and Uxbridge (Middlesex) are buried in the mists of time. It's a classic story of the do-it-yourself philosophy that created the excitement and momentum of the early days of the dot.com era. According to one version of the story, the company was founded by three college students, Dirk Elmendorf, Richard Yoo and Patrick Condon, who had an Intel server, rising debts, and a copy of Red Hat Linux. They set up the company in a dorm room in Trinity University, San Antonio, somewhere between 1996 and 1999, depending on who you ask.

THE WATER IN TEXAS

Condon gives a more prosaic version of the story.

"After school, I worked for a management consulting firm in the Bay Area and Richard and Dirk did IT consulting in Texas," he says. "After a year, I decided I needed a change of pace. I met up with Dirk and Richard and we talked about trends in technology, and decided to set up shop with the domain Rackspace.com."

The company took off rapidly and soon outgrew its original workspace. In the words of Lanham Napier, the president of Rackspace, "they mashed their credit cards out for every cent they could, and at that point had a growing business with no way to finance it."

The trio realised that, if the company was to survive and thrive, they had to raise capital. Their inspired decision was to approach two successful businessmen, Graham Weston, now the CEO, and Morris Miller, now managing director, who brought the first investment into the company.

Dominic Monkhouse, the British managing director of Rackspace Managed Hosting Europe, recounts that: "Graham told them, 'Yeah we've got some money. We think you understand the technology, but its our money, and we understand how to run a business. So we'll come in and run the business, and you can run the technology.'"

Miller and Weston decided that they were going to build the biggest managed hosting company in the world.

"There's something about the water in Texas that meant that nobody laughed at them when they said that," continues Monkhouse. "If you said the same thing here people would mock you, and you probably wouldn't do it. But they set off to do that and they've done it."

Rackspace created a stir at the recent LinuxUser & Developer Expo by providing a Penguin-orientated floor show

Monkhouse continues: "[Weston and Miller] made two important decisions. At the technology level Rackspace would do Linux only, and only Red Hat Linux, so the company was focused on a single technology that worked well and was inexpensive to develop. And the phrase 'Fanatical Support' was coined, setting out their stall early, and setting the bar high. These decisions were not accidents. They were deliberate acts that teed up the business," and defined the principles upon which the company was built. Rackspace still lays claim to

having more certified Red Hat engineers than any commercial organisation other than Red Hat, and more Red Hat servers than any other single company.

The company's attitude to support is as 'fanatical' as the slogan suggests. 'Rackers', as the work force like to call themselves, work in close knit teams that include a team leader, account manager, and mutually supportive technical support specialists. The attitude taken is that: "No news [from a client] is bad news." Monkhouse says that: "67% of customers that come to Rackspace from other hosting providers do so because the previous company let them down. It's no longer a case of 'better the devil you know' – people are wising up to the fact that good customer service is essential. And they're coming to Rackspace to find it."

BRIGHT LIGHTS

Based in San Antonio, Rackspace was less vulnerable to the consequences of the dot.com boom and crash.

"Being in San Antonio has isolated us from some of the swings," says Napier. "We certainly felt the macro shocks just like everybody else. But we were isolated on our island in Texas, away from the valley. So we didn't get caught up in all the excess that some of our competitors did. We lost in the early rounds. We raised US$27 million, which seemed a fortune at the time, but our competitors had multiples of that – US$127 million, US$247 million. Pick a number, they had it. We were always at a disadvantage from a capital-based perspective, but it was a blessing in disguise. If you have too much money, and you're 31 years old, you forget what got you there. You think you're Larry Ellison and go out and buy a jet. But we didn't have the money, so we had to focus on the business."

As a result, Rackspace was forced to keep its eye on the ball.

"The first insight we had is that this is a technology service business," says Napier, "not a technology business. We don't create technology. There are pieces of technology that we do create, but for the most part, we're not writing code or designing the next box. We are the glue between all these different sets of technology."

The nature of the beast – Rackspace creates its own technologies

Napier feels that Rackspace's competitors were distracted by the bright lights and the hype and glory that surrounded the dot.coms. Too many of them thought that hosting was "a business of blinking lights and fancy data centres that had to be able to withstand a tech missile. They thought they had to compete on data centre footage, and the latest bells and whistles."

The hosting companies, like every other high-tech company of the time, over-stretched

Fanatical Support even extends to the managing director who has been known to fix customer's problems himself

themselves, placing their footprints all around the globe and introducing every new technology, even though the bits and pieces didn't communicate with each other and didn't work well together. As a consequence, things became unmanageable.

The problem for many of the companies at the centre of the dot.com boom was that "they had too much money burning holes in their pockets, and they had to put it to work," suggests Napier. "People don't give you 200 million dollars to put in a bank account and make 4% interest. So they had to do things, and they did too much. Rackspace didn't have that luxury, so we never got ahead of ourselves from a fixed cost perspective. We ran the company so that we always had money in the bank. It's interesting that five years later most of our industry still doesn't understand that."

WARM FEELING

Because Rackspace didn't share all the benefits of the dot.com boom, there was no over–spending on unnecessary systems.

"We built them ourselves, and that is still a large part of our business," says Monkhouse. "Nobody knows our business better than we do. Certainly when we started there were no tools that you could buy. Nobody had a hosting automation product that we could have bought in 1999, so we had to build it ourselves."

Rackspace's affinity with Open Source goes to the top of the company.

"When Bill Gates launched Windows 2000 he said that Windows 2000 would replace Linux as the operating system of choice on the Internet," says Monkhouse. "So some PR person rang up Graham Weston to persuade him of the virtues of Windows 2000, and he said, 'But God gave us Linux to run Web servers...'"

"The fact that we built the business to be customer centric influences everything we do everyday," according to Monkhouse. Ten years ago Monkhouse worked for Marks and Spencers, at a time when the chain store giant was experiencing 10% a year increases in profits.

"We took it to heady heights," says Monkhouse, "and everybody thought it was Britain's best managed company. But I worked there and knew it was terrible. The people who ran it had no idea why it was successful, and when it wasn't successful anymore they had no idea what to do."

Monkhouse remembers seeing a poster on a wall in an M&S warehouse in Chesterfield that read: "'Doing a good job around here is like pissing yourself in a dark suit. It gives you a warm feeling, and nobody else notices.' That to me was symptomatic of all the problems they've had since."

Rackspace was the antidote to these kinds of attitudes.

"When I first joined the company," he says, "I met Graham Weston and I thought that he embodied an attitude that I had failed to see in businesses that I had worked for before. He once had a customer who rang late on a Friday evening to complain. Graham turned him around, persuaded him to give Rackspace another chance, and sold him another product. The way that we provided the product was less than satisfactory. The customer rang straight back, and said: 'You told me that all this would work, and it doesn't'. So [Weston] found a team of people to volunteer to stay and help him fix the problem. The CEO pulled together six people and worked with them 'til two in the morning. I don't know many other businesses where you would find the CEO making it his mission to fix a problem personally, rather than delegating it to someone else."

This attitudes permeates the company, according to Monkhouse.

"From the top down there is the philosophy that everyone owns the business. It's not just the fact that everybody's a stockholder. Attention to detail is endemic to the organisation." As a result the company is experiencing a year-on-year growth rate of 50%, and is expecting revenues of US$100 million this year.

Changing cultures

Jono Bacon discusses the effect big business has had on the Linux community

The Linux machine has gone into overdrive in recent years. Not only have we seen companies such as IBM, HP and Dell reserving their seat on the bandwagon but we have also seen our software mature from a cool hack to an enterprise-ready operating system that drives the IT strategies of large and complex organisations.

In addition to the excitement and over-production of rubber penguins, Linux has become something that people care enough about to take legal action against. We are all well aware of the SCO vs world debacle being thrashed out in the courts, and in a strange way this is testament to the success of Linux. It is interesting to note how the typically linear nature of business (research – develop – market – sell) has not only taken Linux under its wing but has inspired many to bank on the Linux phenomenon for rejuvenating their organisations and levelling the playing field in an industry largely dominated by a single organisation.

IN THE BEGINNING

It is curious to consider the beginnings of the entire puppet show. Richard Stallman was working at the MIT Artificial Intelligence Lab in the 1970s when he encountered a Xerox printer that kept jamming with paper. Although Stallman lacked the mechanical capabilities to identify problems with the hardware, he did have the knowledge to examine the printer software source code to spot problems or bugs. At this point in the IT timeline, source code was freely copied between interested parties with little or no consideration for potential legal problems. This was not due to inherent piracy in the lab but was simply common culture.

In addition to the over-production of rubber penguins, Linux has become something that people care enough about to take legal action against

Source code was freely copied. This was not due to inherent piracy in the lab but was simply common culture

However, to Stallman's now-legendary disdain, the printer's code was not available to him and his hands were tied. Not only did this infuriate a man so singularly focussed on technology, it infuriated a man with singularly focussed ethics. The subsequent development of the GNU project has made some great inroads in developing Free Software and securing a pedestal from which to preach its virtues. With the early adopters getting on board and creating free replacements for the Unix tool-set, the GNU project grew at an exponential rate.

The arrival of the Linux 'operating system' was a double-edged sword for Stallman. He indicated his concerns in the biography written about him by Sam Williams – *Free As In Freedom*: "We discovered that the people who considered themselves Linux users didn't care about the GNU Project," says Stallman. "They said, 'Why should I bother doing these things? I don't care about the GNU project. It's working for me. It's working for us Linux users, and nothing else matters to us.' And that was quite surprising given that people were essentially using a variant of the GNU system, and they cared so little. They cared less than anybody else about GNU."

It's evident that Stallman was not happy with the fact that Linux developers did not fall in line with his own specific view of Free Software ethics. Some chastise Stallman as a dictating zealot and some may praise him as a freedom fighter but the tension between the GNU project and the Linux project has always remained.

BREAKING TENSION

Linus Torvalds seemed to take this tension with a pinch of salt and has done ever since. From the viewpoint of the casual observer, it appears that Torvalds tries to stay well away from the politics of the GNU project and

in-fighting between similar organisations.

This is arguably because Torvalds has one key trait to his personality, whereas Stallman has two. Torvalds in an engineer. Not only does he apply a pragmatic approach to his work but he rarely relies on systems, social contracts and constitutions.

People send him patches and, if they are suitable, he applies them. This pragmatic approach has encountered mixed reactions from soapbox critics across the community but appears to work well. Linux's stability is testament to this process.

Stallman also shares this engineering talent but his skill set is augmented by that of a politician. Not only does he take great interest in the technology and hacking code but he has the intensity, drive and moral high-ground of a politician. Although the Linux community has its fair share of notable figures and 'community leaders', the real value in the community lies with the general community who slave over their computers, contributing time, effort and skills to the Free Software movement. Some have the engineering traits of Torvalds and some the political hacker traits of Stallman.

However, the business adoption of Linux and Open Source has created even more interesting examples of different cultures working together and clashing for the same goal. IBM is a clear example of this culture-shock. Many moons ago, IBM was the big boy of computing. IBM sold huge mainframes, servers and other IT solutions, and had both the expertise and clout to back up its products in even the largest of organisations.

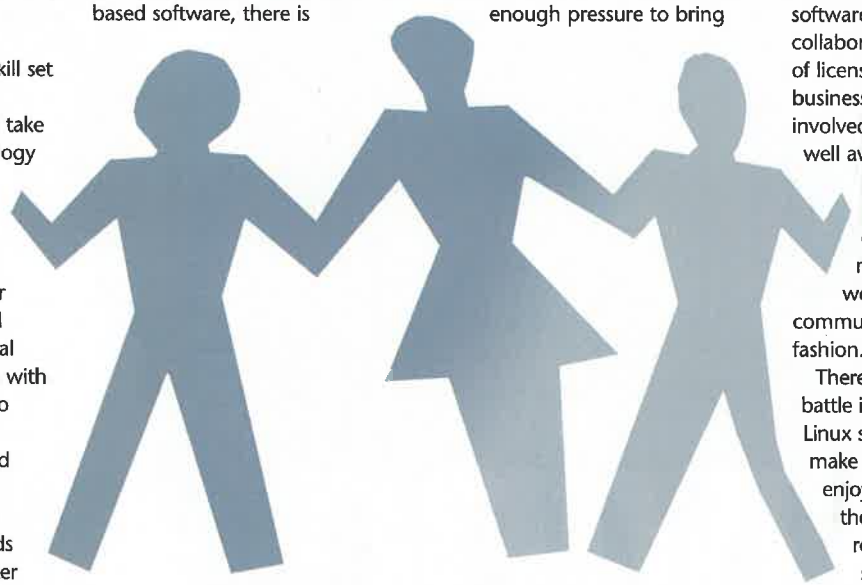
In the time-honoured tradition of large organisations getting more and more competitive, IBM garnered a reputation for being very persuasive about its products and services. This persuasion transitioned well to the enterprise with many a system administrator preaching that "no one got fired for buying IBM".

But who would have thought 20 years ago that a huge organisation like IBM could bank so much of its business on software that is free and not exclusively owned by them? Such a suggestion would have indicated madness.

"We discovered that the people who considered themselves Linux users didn't care about the GNU Project"
Richard Stallman

MOHAMMED AND MOUNTAIN

It's interesting to note what happened: business changed to adopt Linux, rather than the other way around. Due to the stringent licensing on Linux-based software, there is simply no legal slack that a business can use to foster an anticompetitive advantage with the actual software.



As such, businesses such as IBM have contributed developers and resources to making the pool of Free Software *work better in their context*, which they then back up with unique services and hardware products. In other words, the notion of competitive advantage strategies with closed software is making way for a competitive advantage strategy of services and experience. Although Microsoft refers to this software model as 'parasitic', in that some organisations can simply harvest software and not contribute back, the reality is that few organisations have done so. If they did then they have typically fallen by the wayside.

The 'too good to be true' cynicism surrounding Linux seems to be its biggest enemy. The Linux community has striven on despite being the offshoot outcast, and has shrugged off claims of being unconstitutional and a 'cancer'. But the next battle presents far more serious challenges – software patents and the Linux paper trail.

Despite rabid opposition from many with a knowledge of the subject, software patents in Europe appear to be slowly worming their way into the hands of the policy makers. Organisations such as the Foundation for a Free Infrastructure (www.ffii.org) are working hard to publicise the threat faced by such patents, but the campaign has largely fallen on deaf ears. The responsibility of the large corporations and organisations is to now develop enough pressure to bring this issue to the forefront and publicise the threats.

The Linux community has been through a lot in the last five years. New businesses and contributors have entered into our community and we have seen the beady eye of the world's press focussing on the community more and more.

While most of us welcome advances in the development of Linux and Free Software, the culture has basically remained the same. The same ideals and ethics that drove the community 10 years ago are still dominant. In addition to the strengthening of the Linux software offering, the same ideal that Joe Developer should be on the same community footing as anyone else has remained.

Whether you love or hate Stallman, one testament to his genius was the creation of a collaborative development system where everyone stands on the same level and with their heads facing in the same general direction.

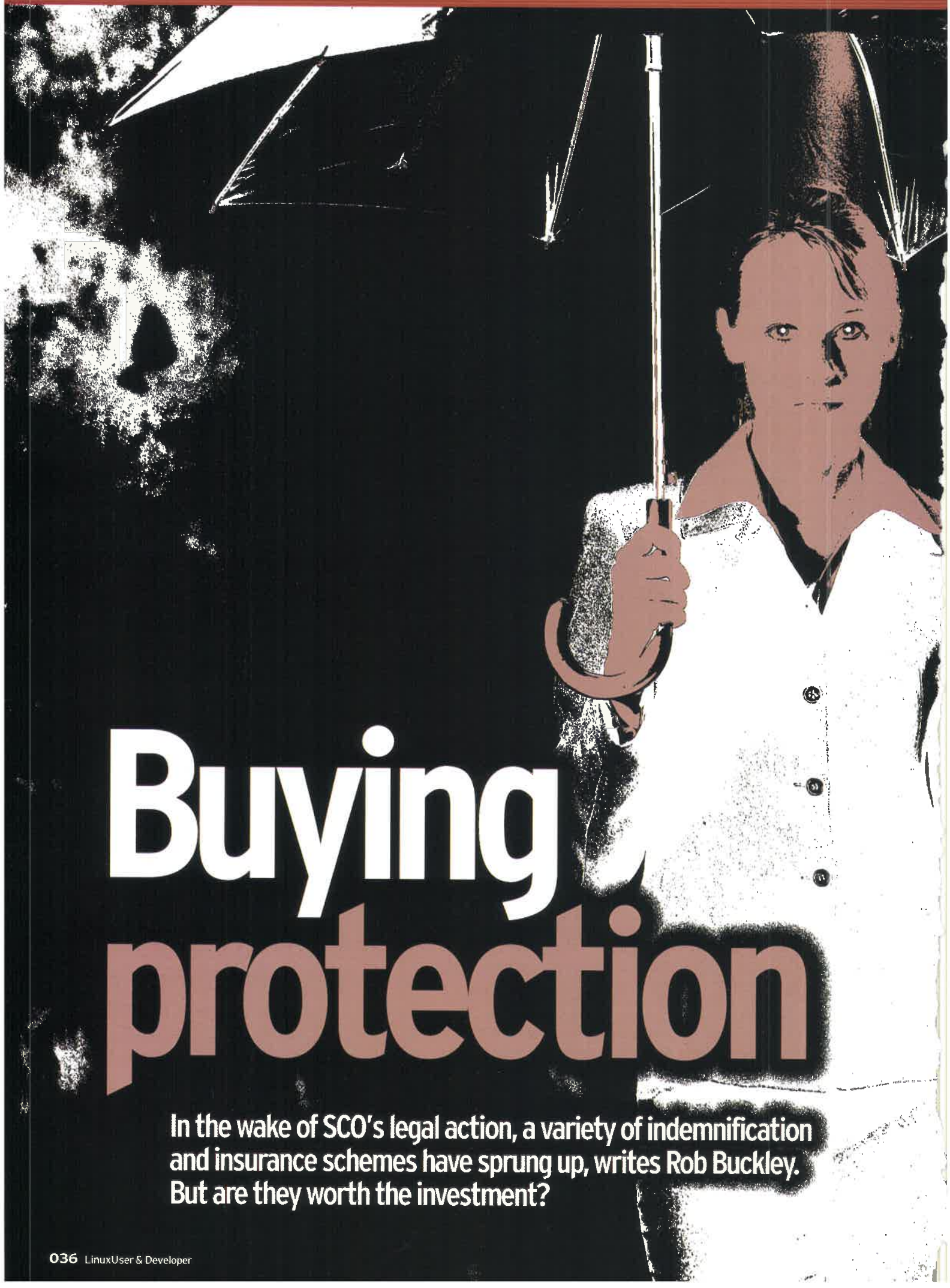
THE BATTLE CONTINUES

When Microsoft's Bradley Tipp referred to Linux as 'parasitic', he was bizarrely accurate – Linux is parasitic in the way that it is easily adaptable. Linux's flexibility and community-driven licensing framework is ensuring that software can be developed and collaborated on with a secure set of license agreements. The businesses that have become involved in the Linux industry are well aware of their commitments to the community and it is good to see the vast majority of businesses working alongside the community in a symbiotic fashion.

There is no doubt that the battle is long from over and Linux still has a lot of headway to make before it can be used and enjoyed by the majority, but the fundamental culture has remained the same and the software continues to improve and innovate.

The future looks bright. Although many people were nervous that Linux and Free Software would lose its appeal when businesses started getting involved, few think that business contribution has been bad for the community. With our community united and backed by enterprise business, who knows what is possible?

The businesses that have become involved in the Linux industry are well aware of their commitments to the community



Buying protection

In the wake of SCO's legal action, a variety of indemnification and insurance schemes have sprung up, writes Rob Buckley. But are they worth the investment?

Imagine being bankrupted and put out of business. It's a terrifying thought for all companies. As well as the fear of failure and the humiliation, there's the little matter of all those hard-working employees forced into unemployment through no fault of their own.

But how much worse would it be to be bankrupted not for anything you've done or because of some act of God, but because of something you simply bought in total innocence from a perfectly reputable company?

SCO has raised such a fear in the minds of companies around the world, although even mentioning the company name is enough to trigger both nausea and venom in equal amount from even the most civilised GNU/Linux user. The self-proclaimed "owner of the Unix operating system" has an ever-changing lawsuit against systems giant IBM.

This originally rested on one main allegation – that parts of the Linux kernel contain Unix code that IBM illegally gave to the Open Source community. If IBM had been the only target of SCO's suit, few people would have been worried. But SCO argues that since the binary version of its code is inside practically every Linux kernel installed on computers worldwide, Linux advocates are using stolen property and should pay SCO a licence fee. This is calculated on every machine on which they've installed the kernel. Not only that but SCO has said it will sue anyone who refuses.

To hammer the point home, the corporation sent letters to over 1,500 corporate Linux users and filed lawsuits in the US against car manufacturer DaimlerChrysler and car parts specialist AutoZone. Even though SCO no longer alleges that IBM transferred code into the Linux kernel, it is continuing with its suits against DaimlerChrysler and AutoZone, maintaining that someone did.

"I surmise that a lot of the companies that claim to offer indemnities would go bankrupt if forced to pay those claims"
Bruce Perens

WAIT AND SEE

"Lots of companies are taking a kind of 'wait and see' approach," says Gregory Blepp, vice president of SCOSource. "The perception in the market is that if the IBM case is settled, then there's still time to discuss. We are taking the firm position of saying the IBM case and the customer-usage of Linux are two completely different cases. The problem with IBM is a breach of contact; but we have contacted customers, saying they are using software that uses our intellectual property. We have contacted 1,500 customers globally, formally stating we have a problem with the software which is being used out there in the market and requesting compliance with our intellectual property rights."

SCO is offering the lucky recipients of their letters the chance to settle by buying a license for each server or desktop equipped with a Linux kernel or they "may need to see us in court", continues Blepp.

This might be understandably frightening some bigger organisations and companies away from deployments based around GNU/Linux. Forrester, an independent technology research company, polled 36 North American companies in May this year to see how the SCO suit was affecting their views of GNU/Linux. Thirteen of

WHAT'S ON OFFER

Linux distributor Red Hat's Open Source Assurance Program is a warranty rather than an indemnity. What's the difference? Firstly, if you get sued, you have to prove there's a problem with the software, which might involve a trip to court on your part. Secondly, Red Hat will only replace problematic code and if the case continues, the company won't pay any of your costs.

"Our programme is much better positioned for the customer than competitors'", says Bryan Sims, Vice President of Business Development at Red Hat. "What they're offering is an after-the-fact solution. What we've decided to do is pro-actively go out and look at the source code. If we find anything the matter with the code, we will replace it as an update or an upgrade. The real value to the end-user is the comfort that they can continue to use the software and that's what we offer, rather than an after-the-fact solution that doesn't necessarily solve the problem of being able to use the software. "

In addition to the Open Source Assurance Program, Red Hat has set up the Open Source Now Fund, a non-profit corporation that will cover legal expenses associated with infringement claims brought against companies developing software under the GPL. It has donated $1 million to the fund so far.

those companies said they were concerned about the legal questions surrounding GNU/Linux (including the SCO/IBM suit), with those not using GNU/Linux apparently slightly more concerned than those that do.

Of course, this in turn worries those groups which would like to see GNU/Linux and Open Source software adopted in the enterprise. They've been looking at ways to end the fear, uncertainty and doubt caused by SCO and the most common solution chosen so far is indemnification. If that just happens to give them a chance to get ahead of the others in the market, all the better for them.

INDEMNIFICATION

On paper, indemnification is similar to insurance. However, it differs mainly in terms of who can provide it. This means it can be offered by companies other than insurance outfits, which need to abide by certain financial reporting restrictions and so on.

A software indemnity will typically say that if the user is sued by a company for some kind of intellectual property problem, the indemnifier will cover some or all of the costs. But like many insurance policies, the devil is in the details.

For instance, indemnities can stipulate that the GNU/Linux distribution has to be running on a specific vendor's hardware; that it has to have been bought from a specific company; that the indemnifier has to have audited your code (or you must not have changed it in any way); that you have to have spent a certain amount of money with the company or taken out support and maintenance contracts with it; that only certain kinds of lawsuits might be covered; that you might have to agree to hand over your legal defence to the indemnifier; that you might have to change your working practices; that there may be an upper limit on how much the indemnifier is willing to pay out or which parts of your total costs are covered (is it just your legal defence or does it include expenses or damages if you lose the case?); or that the indemnifier may only offer to replace "bad" code with new code.

"Our indemnity programme is basically targeted at an issue in the market. It's very specific as to the need. I can't recall any time we've needed to do this in the past"
Efrain Rovira, Worldwide Linux Marketing Director, HP

Currently, there are few companies offering indemnification for customers of GNU/Linux, although indemnification is more common in the closed source/proprietary world.

"If you look at things like consumer software, they're likely to provide limited or no indemnity," says John Salmon, a partner at law firm Masons. "With more specialist software to a more limited market which is expensive, some would expect some further indemnity."

"When you pay to use someone's software, you want to be sure you're entitled to use this thing," adds Simon Halberstam, a partner at Sprecher Grier Halberstam "That it's not ripped off from some third party. You're paying for the right to use this, so you want to make sure it's a valid right. When I advise my clients, I advise them to demand an intellectual property indemnity. I'd find it very difficult to advise clients to go through with a contract if they didn't get that comfort. With Open Source, it's a different environment though; although it would be desirable to get an indemnity, it's understandable if I don't get it because I'm getting such a good deal anyway: it's unreasonable to expect the owner to take on liability for that as well."

NON-UBIQUITOUS

Closed-source indemnities are not as ubiquitous as might be thought, even in the enterprise software world. HP, for instance, does offer an indemnity policy for end-users running Red Hat and SUSE Linux users on its hardware but doesn't offer an indemnification on its other products.

"Our indemnity programme is basically targeted at an issue in the market [the SCO lawsuit]," explains HP's worldwide Linux marketing director Efrain Rovira. "It's very specific as to the need: I can't recall any time we've needed to do this in the past."

Notably, open source champion IBM is an indemnification-free company. It refuses point-black to indemnify its GNU/Linux-using customers, arguing that it would be impossible to put in place a sensible indemnification policy that is in keeping with the spirit of Open Source; since no single company provides it, users understand that there are no warranties or indemnities that come with Linux, and even that since the claims that have been alleged by SCO against IBM "have no basis", no indemnification is needed.

WHAT'S ON OFFER

Novell

The proud new owner of SUSE Linux, Novell wants everyone to think of it as the premiere supplier of GNU/Linux to the enterprise. Of all the suppliers, it has the most extensive indemnification policy, and it is the only GNU/Linux distributor that offers actual indemnification.

The entry requirements for Novell's indemnification are quite strict, however: you have to be running SUSE Linux Enterprise Server 8.0 (although you don't have to have bought it directly from Novell), you have to have a technical support contract with Novell (the lowest priced contract is US$1,500), and you have to buy upgrade protection or maintenance (minimum spend: US$50,000). You also have to register your details with Novell.

In return, you get one of the broadest indemnification policies available. For starters, you'll be covered against any copyright suit, not just from SCO. Novell will take over the suit for you, and all legal fees, damages and penalties that you might incur will be covered (although there is a cap on the damages Novell will cover you for, equating to 125% of your SUSE Linux outlay or US$1.5 million, whichever is lower). And you can run SUSE Linux on any hardware and it will still be covered.

"We're trying to address the actual crux of the matter which is the enterprise customer," explains Nitin Maru, Vice President of Legal Affairs for Novell EMEA. "If you look at the litigation out there and look at the comments of a certain vendor, they're going after enterprise customers. If we'd gone with blanket coverage, all of our customers would have had to pay for something that 90% of them don't need: they'll never be touched by litigation or claims."

Maru also argues that most of Novell's enterprise customers that are using SUSE Linux already meet the entry requirements for the company's indemnification policy, and so the entry requirements are not as harsh as they might appear.

WHAT'S ON OFFER

Systems and software giant HP's indemnification has no limit, according to the company's Worldwide Linux Marketing Director Efrain Rovira.

"Once we decided we were going to do it, we had to decide what to offer," he says. "The discussions about this went all the way up to Carly [Fiorina, CEO of HP]. It was Carly's decision that we put no limit whatsoever on how much money was going to be spent on lawyers or debt. [She said:]'If this is going to make sense and customers are going to get excited about this, you can't go putting caps on it. You've got to show them you're really committed to this."'

HP's no-limit policy does have a few requirements. Firstly, you've got to get your GNU/Linux distribution from HP. Then you have to run it on HP hardware. You also have to have an HP service contract (which "can be as low as a few hundreds of dollars," says Rovira). Finally, you have to agree to surrender your defence in any prospective lawsuit to HP's lawyers. After that, you're fully indemnified.

Note that in common with all other indemnities, you're not covered against patent-abuse suits. Also importantly, you're only indemnified if SCO decides to take you on. If anyone else decides to sue you, you're on your own.

HP is already considering whether it will indemnify desktop Linux users once it starts to ship SUSE Linux equipped PCs in the second half of the user. Rovira says, "We have to be consistent. We're going to do it. We've got to do it. If we're doing it on the server, the customers are going to say, 'Why can't you do it on the desktop?"'

The company has received a lot of abuse for this failure to indemnify.

"IBM is being hypocritical," accuses Sun president and chief operating officer Jonathan Schwartz. "If the issue is a non-issue, why don't they indemnify their customers? And if they don't need to indemnify, why do you have the world's largest patent litigation team inside IBM suing the bejesus out of the entire industry?"

IBM is at least consistent, since no piece of its Open Source code is indemnified, including its highly popular WebSphere Application Server, and neither is AIX, its closed-source Unix operating system. IBM doesn't have its own GNU/Linux distribution and doesn't install it onto servers or desktops. It relies on third-parties or end users to add the operating system to its hardware, so can happily argue it shouldn't have to indemnify a product it doesn't actually sell.

IBM raises another major issue that other companies have had to grapple with: it didn't develop Linux by itself and doesn't know for sure where all the code comes from, so how can it take the risk of indemnifying its customers against possible copyright infringement when it doesn't know for sure there isn't some other company's code illegally embedded in Linux?

For companies such as Novell, it's a balance of risks. Novell automatically indemnifies users of all its closed source software because "we developed it, we have control over it, we know the engineers who developed it and we have the engineers with appropriate agreements that transfer the intellectual property rights to Novell," says Nitin Maru, Vice President of Legal Affairs for Novell EMEA.

"We are taking the firm position of saying the IBM case and the customer usage of Linux are two completely different cases"
Gregory Blepp, Vice President, SCOSource

But Novell's open source indemnification is comparatively limited in scope.

"On the Open Source side, you never know: the risks are greater," Maru continues. "What we've taken is a calm and measured approach, balanced against the risk to Novell and the duties we have to our shareholders against our duties to the Open Source community and what is needed out there to push open source further and further into the enterprise."

This lack of control over Open Source developments and the possibility that more companies may try to repeat SCO's stock-price-raising lawsuit – one with perhaps greater chances of success or maybe even a stronger case – means that Novell is one of the few companies that have been willing to go out on a limb and indemnify customers of an Open Source product against any copyright suit that might emerge. And it thinks it has a competitive advantage in doing so.

"I strongly believe it has given us an advantage," maintains Maru. "It's been proven in several customer situations. I've

WHAT'S ON OFFER

For those who cannot afford an indemnity or do not meet the criteria other companies', the last recourse is the Linux Legal Defense Fund. Setup by the Open Source Development Labs, an industry-funded body dedicated to improving and advancing Linux for enterprises, the fund was created to help cover the legal expenses of Linux end-users who may become involved in litigation with SCO on issues that affect the Linux community and industry. The fund will also cover the legal expenses of Linus Torvalds and OSDL during the SCO/IBM litigation.

The fund doesn't have many entry criteria: you need to be sued by SCO for running Linux and the OSDL board of directors has to decide that your case meets its criteria. To get its approval, you'll need to provide a brief statement indicating how the resolution of the lawsuit against you could help resolve intellectual property issues that could affect the Linux kernel, GNU/Linux or Linux-based applications. In other words, your case has to be important.

The fund will cover some or all legal fees, costs and expenses of anyone sued (the amount will be decided by the OSDL board), and has a current pool of US$3 million, donated mostly by OSDL members such as IBM, from which to pay. It hopes to increase that fund to $10 million.

had emails from two or three customers looking at different distributions, and while there were other areas that interested them, a key differentiator was the fact they would get indemnity from Novell."

MARKETING HYPE

Other companies agree that indemnification is definitely proving attractive to some customers. JBoss's European general manager Sacha Labourey says that companies are interested in talking with the firm because of the indemnification it now offers on its Open Source application server.

"We had some different opinions inside the company at some point," he says, "but now the result is clear. Large companies do care about indemnification."

HP's Rovira says his company's policy is "of great value and a leading differentiator for our sales people", while Forrester's survey of North American companies showed that 27% of them would be interested in an indemnification programme.

But how much of this is marketing hype, cashing in on the fears of end-users that SCO has raised? Does anyone really need an indemnification policy or is it just a tool to get companies to buy from one vendor rather than another?

UK users certainly appear to have little to fear at the moment.

"Check your license agreement and see what it covers," advises Masons' Salmon. "But as far as the UK user in concerned, sit and wait and see what happens. There's no certainty SCO will win the case and there's no certainty there'll be any case at all in the UK or they'll try anything in the UK.

"That's not to say people shouldn't be commercially sensible," he adds. "When buying any software, whether

"The result is clear. Large companies do care about indemnification"
Sacha Labourey, European General Manager, JBoss

WHAT'S ON OFFER: JBOSS

It's not just GNU/Linux vendors getting worried by SCO: other Open Source software suppliers are feeling a knock-on effect from the case.

"There's a fear that's grown a lot since the SCO case that Open Source is not safe," says Sacha Labourey, European General Manager at application-server provider JBoss.

"People in legal departments of big companies don't care much if it's Linux, Java or whatever: they see it as Open Source. We need to fight that because what we are trying to push is the notion of 'professional Open Source', which brings the exact same kind of features as any software vendor, such as indemnification."

JBoss's indemnification policy is broader than many. It will cover any copyright suit (SCO so far hasn't claimed that any part of the JBoss code is its property, so a SCO-specific policy would be meaningless) and JBoss will try to take over any end-user suit and amalgamate it with any others. But it will only indemnify you up to the value of your contract with JBoss.

"If you ask a customer directly whether they would prefer indemnification up to the total cost of the contract or would they prefer more, the customer would be a fool to say, 'Oh no, the amount of the contract is enough'," points out Labourey. "But what we see is that customers are already happy with the fact indemnification is in the contract."

WHAT'S ON OFFER

Sun's indemnification policy is clear in one respect: if it's a Sun product, the company will indemnify it. If it's not, you're on your own.

This means that, oddly, Sun won't indemnify Linux running on a server (it resells Red Hat and SUSE Linux), but is the only company so far that will indemnify Linux on the desktop as part of its Sun Java Desktop System.

There's another big contrast with the other vendors: Sun will indemnify not because it wants Linux to succeed or because it think SCO has a poor case, but because it's bought licenses from SCO to cover any alleged copyright improprieties.

"We can indemnify our products because we have paid SCO for the license," says Sun's new President and Chief Operating Officer Jonathan Schwartz. "If we incorporate someone else's component, we will make sure we can indemnify it. I have licenses to all those issues that SCO is suing IBM for. If I didn't have them, I certainly wouldn't indemnify them."

The motivation for indemnifying at all, says Mark Littlewood, UK Product Market Manager, Volume Systems at Sun and the company's UK spokesperson on indemnification, comes from research into enterprise attitudes towards Linux.

"We did some research on Open Source and one of the key things is due diligence," he explains. "The customer has some concerns that they want to be assured their vendor, who they license or buy this stuff from, won't put them into a situation which compromises them. It's reassurance at the end of the day: it's just for large organisations that want to have a tick in the box to make sure there isn't any liabilities and they won't get themselves into trouble by going down this route."

Since Sun - and Sun customers - essentially doesn't have anything to worry about from SCO because of the company's licensing agreements, it is perhaps understandable that no one at Sun is really sure about the extent of the indemnification. While Littlewood says that Sun customers are protected by the Java Desktop System's license agreement, he's unsure how much of a customer's costs are covered, whether there's a maximum liability (there isn't) or whether it's simply threats from SCO that are covered (it is).

When we asked Sun to expand on the previous details provided, it took a week before they gave us a statement, and it contained exactly the same information as they had previously provided. As one Sun spokesperson confided in us: "It's not detailed because the whole area is a very dodgy area for [Sun]."

Open Source or not, you've got to look at what the license agreement is and see what protection it provides."

And developers using Open Source software should look to their existing professional indemnity (PI) policies. "A lot of developers will have their own PI policy that will cover all of this: most will have an insurance policy for infringing copyright."

Bruce Perens, a long-time Open Source developer, co-founder of the Open Source Initiative and a member of the Open Source Risk Management board of directors, says that vendor-provided indemnification policies aren't for everyone.

"Pretty much every business of a certain size has a liability policy," he says. "They know they will be liable in some way, from time to time, so insure themselves against those risks."

He also points out that an indemnification policy might not ensure the end-user isn't out of pocket from lawsuits.

"I surmise that a lot of the companies that claim to offer indemnities would go bankrupt if forced to pay those claims. Most of them do not have an insurance policy that covers their payment of those claims."

Nevertheless, with insurance premiums still sky-high since 9/11, many organisations with insurance policies are looking to their suppliers for indemnification, if only to avoid an increase in their premiums.

LEGAL COSTS

Another important issue for the UK is the question of legal costs, which is likely to discourage suits against end users.

"It's a very litigious environment in the US," says Novell's Maru. "The primary difference is that if you lose the case here, you pay the other party's costs. If SCO sued IBM in Europe and lost, they would be paying all of IBM's costs. In the US, they don't have to do that, so there is great incentive to sue people."

In the UK, unless the person suing you has a good case, it's unlikely they will do so, particularly if the chances of getting money out of you is small.

"It's unlikely the end user will be the target; it's likely to be the company that ripped off the code that's the target," elaborates Simon Halberstam. "If you sue, you're less likely to get the damages you want, and it's less likely you'll be able to put together a strong legal case since the end-user will be able to say, 'I was unaware of this and I used it in innocence'. If you get a judgment, the damages are likely to be reduced substantially since they were innocent of what they were doing."

Forrester analyst Richard Fichera also points out that even if SCO wins its suits and comes after large companies with plenty of assets, these companies still have plenty of options.

"To the best of our knowledge," he says, " there have been no cases of end-users being held liable for vendor infringement on a widespread basis in the history of the computer business. And if SCO is planning to build a business (which is arguable), it eventually must start behaving like one. Regardless of the legal situation, a business is not built by threatening to sue prospective customers that have alternatives."

What concerns many organisations more than a lawsuit, however, is the thought of having to migrate from GNU/Linux to another platform. Migrations typically cost hundred of thousands to millions of dollars and this cost has stopped many corporations moving from Windows or Unix to GNU/Linux in the past. Companies considering a move away from Windows or Unix are more concerned by the thought of spending money on two migrations than they are on the thought of a relatively unlikely copyright suit. It is, after all, one thing to violate copyright in innocence because of something a supplier did, but quite another to carry on using that software after it's been proven in court that it contains stolen property, particularly to big corporations concerned about the bad press they will get as a result.

It might be, despite the scorn heaped on it by other vendors, that Red Hat's Open Source Assurance Programme is genuinely what a prudent large enterprise wants: the guarantee that the enterprise can carry on using software even after it has been found to violate copyrights. If you peel away the indemnification hype surrounding many of the policies available, you'll find that the likes of Novell will also guarantee that they'll change the software to make it legally unproblematic. They just prefer to focus on their indemnification policies.

With SCO, the only company currently threatening Open Source users, the case for indemnification seems weak at the moment. But SCO is not the only snake in the garden. Kenneth Brown, president of the Microsoft-funded Alexis de Tocqueville Institution, is alleging that a survey he has conducted has shown that open source software is "often taken or adapted without permission from material owned by other companies... to this day, we

"If we find anything the matter with the code, we will replace it as an update or an upgrade"
Bryan Sims, Vice President of Business Development, Red Hat

WHAT'S ON OFFER

Most right-thinking GNU/Linux users would rather rip their own arms off than give money to SCO, but to larger enterprises, the choice of whether to stump up the cash is a question of balances and risks. Given the various likelihoods of being sued by SCO or not, would losing a SCO suit and paying damages, legal fees, etc be more expensive than simply paying SCO licence fees?

So if you're planning to go down this road - and you'll be in a minority since SCO only earned $20,000 in licences worldwide in its first financial quarter this year - the first thing to do is check to see whether you'll actually need to spend money: you might be entitled to a free "SCO IP Licence", since SCO will automatically give you a licence if you already have SCO Linux or Caldera OpenLinux and if you register your details on the SCO web site.

Otherwise, SCO has a tiered licensing fee system:

	License fee	Annual license fee
Server with 1 CPU	$699	$149
Server with 2 CPUs	$1,149	$249
Server with 4 CPUs	$2,499	$539
Server with 8 CPUs	$4,999	$1,079
Additional Single CPU	$749	$149
Desktop/Workstation	$199	$49

SCO's licensing system does have one obvious drawback: if you're sued by anyone other than SCO, you won't be covered since SCO doesn't indemnify Linux users against anyone else's claims of copyright infringement.

WHAT'S ON OFFER OPEN SOURCE RISK MANAGEMENT

Currently only operating in the US, OSRM is a new breed of indemnifier. An independent company, it's the only company that will indemnify any open source user or developer (subject to certain conditions).

"Our focus is in two primary areas," explains John St Clair, executive director of OSRM. "The corporate user and the developer. The corporate user includes those using Open Source in their own product or distributing Open Source in some way. We're also looking at providing supplemental indemnification to developers who might already have professional indemnification."

By paying US$30 for every $1,000 of coverage required, anyone using Open Source software can be indemnified by OSRM. And while vendor indemnifications often stipulate that the end-user can't alter the code in any way without voiding the indemnity, OSRM will still indemnify users that change the code.

All this comes with caveats, however. For one thing, OSRM has to audit the code before agreeing to indemnify it. The company has already done this with the Linux 2.4 and 2.6 kernels, and it is now working out from the kernel to look at some of the more common parts of GNU/Linux distributions.

"We've done a very detailed study of the Linux kernel against a database of other prior art software to identify possible areas of copyright infringement," St Clair says, "but we've not been able to find any that would be a cause of concern for indemnification".

OSRM also requires that organisations doing development with Open Source code follow its best practice procedures to reduce the risk of IP violations. It's the combination of audit and procedures that makes OSRM feel confident enough to "put our money where our mouth is".

The motivation for the OSRM indemnification policy is partly business but also partly altruistic, according to St Clair. "Clearly, there was a recognition that SCO and our litigation-friendly society in the US was trying to create a vulnerability in the Open Source development model. We looked very closely at SCO, to understand the dynamics behind it, what the motivation was and what the risks and exposures were to users and distributors and really identified a potential vulnerability that others might in the future try to take advantage of. We clearly saw that there were lots of organisations slow in their adoption of Linux and questioning their adoption of Linux. It was important for an organisation to come forward and take a leadership role by providing a solution that maintains and ensure the benefits of open source remain."

Whether OSRM makes it over to the UK and the rest of the world is still being decided upon.

"At the moment, we're focused on the US," reveals St Clair. "We're seeing how beneficial in might be in other markets. We have lots of advisors and contacts in other countries who are helping."

"When you pay to use someone's software, you want to be sure you're entitled to use the thing"
Simon Halberstam, Partner, Sprecher Grier Halberstam

have a serious attribution problem in software development because people have chosen to scrupulously borrow or imitate Unix."

Even if SCO's suit is unsuccessful, it's likely that some companies that saw SCO's stock-price leap in response to its ongoing legal proceedings will consider copyright suits, particularly if Brown can support their arguments.

"The main question is how society will evolve," argues JBoss' Labourey. "We've seen the growth of legal issues all over the place, and it was much less of a problem 15 years ago." More copyright suits are likely in the future, he maintains.

At the moment, indemnities are mostly designed to differentiate their providers in the marketplace and to reassure larger companies that Open Source is enterprise-ready and is not a risk. While they offer some protection, they often overlap with existing policies, are unlikely to be ever used, are not available to smaller customers and may provide little coverage if the worst happens – an unlikely event in any case. But those same accusations can be leveled at any form of insurance.

With the chances of future SCO-like lawsuits occurring by no means unlikely and a SCO win not totally out the question, the issue comes down, as with any insurance policy, to risk: the worst will probably never happen, but if it did, could you afford it?

Rebirth

Linux can bring old computers back to life. Jono Bacon provides some hands-on advice on how it's done

The desktop PC revolution is balanced atop a basic assumption – that computers will always increase in power. The march of technology is a good thing on many levels because it also allows progress in software technology, but, on the other hand, it's the end consumer who quite literally pays. We have to buy new technology every couple of years (or, if you run Windows operating systems, every year), and we then discard old but usable equipment.

It's true that the cost of buying a computer has dropped, but this isn't simply about price and the sheer amount of waste generated must be factored into the equation. Not only that, but old computing equipment can pollute the environment when packed into landfill sites and the production of new equipment is far from eco-friendly.

Most damning of all, however, is the fact that the 'old' computers we discard are usually fully functional and are likely to remain so for years if not decades. Their death is often highly premature.

Luckily, and not entirely coincidentally, Linux can come to the rescue. The reason for this is unique to the Free Software movement. Since the original development of the GNU toolset and the Linux operating system, the unwritten rule was to make code as flexible as possible. This has not only meant that Linux can run on different types of desktop computer, but that it can also run on palmtop computers and other fundamentally limited hardware. It also means that Linux software can be optimised to fully utilise the platform that it is intended to run on.

In addition, there are even some projects that have been created to provide higher performance software for older hardware. We will be exploring some of this software in this article.

GETTING STARTED

The first decision to make is the choice of distribution. This isn't worthy of too much discussion here, but there you are certain distros that you better advised to use than others. If you are running a 386- or 486-based computer, you will need to ensure that the distribution supports that chip. Most do, but Mandrake, as one example, is specifically built for Pentium-class machines upwards. There's also performance to take into consideration – even if you have an original Pentium chip, Mandrake may be too slow due to how it defaults to the KDE/GNOME desktop.

The 'old' computers we discard are usually fully functional and are likely to remain so for years if not decades. Their death is often highly premature

Generally, a good distribution to use for all machines is Debian. Not only will Debian give ultimate flexibility in terms of architectures (Debian runs on Intel, Alpha, Arm, MIPS, Sparc and other platforms), it also makes handling packages a lot easier. It doesn't lean towards defaults but maintains a healthy choice of packages throughout.

When the distribution has been decided upon, you should install a basic system on the computer. This should include everything to get the system up and booted as well as the Xfree86/Xorg system. It's probably best to avoid installing KDE and GNOME, however. Although KDE and GNOME are very usable environments, they are also memory hungry, and we need to keep as much spare memory free for applications.

When building a lower-specification system such as this, you will always need to prioritise which software is more critical. There's no reason why we couldn't install a fully functional KDE and GNOME system, but

then we would probably only be able to run a text editor with any degree of speed.

One of the most important things to do when setting up a computer with limited hardware is to compile your own kernel. For those who are not familiar with the wonders of kernel compilation, the process involves selecting certain features and then rebuilding the code so the kernel tunes into how your system runs. The default kernels included with most distributions offer a huge range of features, so they are suitable for most systems. Recompiling your own kernel cuts out the features that don't apply to your system.

Kernel features can be either compiled into the running kernel, so they are always in memory, or loaded when needed as modules. It is recommended that only essential features are compiled into the kernel, with everything you use compiled as a module. If there are features that do not apply to you, simply leave them out. Some people compile everything as a module for those times when they plug a new device in, or need to use a feature that they have not used before. This can be viable for those systems with the hard disk space to store these modules, but if you have limited space, a different policy is required.

GRAPHICAL INTERFACE

For today's computer user, a graphical interface is a key requirement. These users need to know how and where to start the applications that they use regularly. The requirements of the graphical interface are dependent on whether the user is to administer the machine themselves or if the machine will be handled by someone else. As an example, if the user is going to need to administer the computer, they will need to have tools to graphically configure the machine. They will also need to be able to install packages and other software. On the other hand, if the machine is being set up for a user with a specific set of programs that they need to use and nothing else, you simply need to supply a desktop environment with an icon for each program. In the latter case, there is no point including extra functionality that will simply take up disk space and won't be used.

For lower specification machines, window managers range from the arcanely basic to the fully featured. We need to strike a balance between something that is usable and has a low memory footprint. There are three real options for these requirements.

For today's computer user, a graphical interface is a key requirement. These users need to know how and where to start the applications that they use

The first is IceWM (www.icewm.org). This aims at provide a complete user interface, but one that is simple and efficient. One of the main benefits of IceWM is that it includes the familiar taskbar and application menu that so many users are familiar with. Another plus in its favour is the fact that it includes Alt-Tab switching, multiple workspaces and keyboard shortcuts.

You might also consider Blackbox (http://blackboxwm.sourceforge.net/). Blackbox is possibly one of the lightest window managers that is still usable, and a lot of people employ it very successfully on ageing hardware. One of the nice features from a setup perspective is that it relies on nothing but the X libraries to compile – there's no complex web of dependencies.

Fluxbox (http://fluxbox.sourceforge.net) is actually derived from an older version of Blackbox. In addition to fully supporting Blackbox, Fluxbox also includes features such as window tabs and an icon bar. These extra features naturally require more resources but, if your machine can handle it, Fluxbox is preferable to Blackbox.

Of all of these window managers, IceWM is probably the recommended choice. The balance between features, familiarity and performance seems appropriate, and very few machines are unable to run it well.

CONTROLLING SOFTWARE

Most of the modern distributions today comprise prebuilt binary packages that you simply install and run. These packages are fine in most cases, but there are potential speed improvements that come from building certain packages yourself. These speed improvements typically take place when you are configuring the code.

Most applications now use the GNU range of tools to allow you to configure and compile your software. This usually involves typing the following commands:

```
./configure
make
make install
```

The command we are most interested in is the ./configure command. This special script performs a number of tests to see if there is suitable software on your system to compile the code. When you simply run the configure script as above, the default set of software and settings will be compiled into the resulting program.

In most cases, the configure script is very flexible and you can usually switch certain features on and off in the compiled program. Some of these features will slow the program down and you may never need them.

You can find the list of available options by typing:

```
./configure  --help
```

You can utilise configure features by specifying these options after the configure command. As an example, if there was a -disable-threads

ANALYSING PERFORMANCE

An important part of the process of improving the performance of a computer is finding bottlenecks. Discovering what a computer is processing at what time can give you clues about where to improve performance in particular parts of of the system.

There are a number of tools available that will poke around your system and see what is going on. These include:

top	Tells you which processes are running at which time
df	Tells you how disk space is being used
netperf	Useful for finding network bottlenecks
cruft	Finds unused leftover files on your system
hdparm	Hard disk optimisation tool
bonnie	++ A hard disk benchmarking tool for simulating different types of disk access

DOING THE RIGHT THING

Due to Linux's apparent capability for bringing older computers back from the dead, various organisations have been formed to resurrect older machines and use them to help people with training, education and other uses. The sheer number of older machines being sent to the skip has also meant that such organisations are well stocked with computers.

Lowtech (http://lowtech.org) was formed from the Redundant Technology Initiative, an arts group that used older computers and Linux to provide resources for creative people who had no computer. The Lowtech group run an access space and various events in Sheffield, UK.

Access To Recycled Technology (www.a2rt.org) is run in a similar way to the Lowtech group, but is based in Birmingham, UK. The group runs creative workshops and festivals with recycled Linux-based computers.

option, you would add it like this:

```
./configure -disable-
threads
```

You can string a number of configure options together on the same line if you need to.

You should read the configure help output carefully and look for any options that can increase speed or lock out features that you don't need. A good string of configure options can provide a measurable improvement in speed.

You should also consider stopping various services. The default installation of many distributions may include a lot of software that you simply do not need. Alternatively, you may find yourself with some software that you do need, but only occasionally. Some of this software may come with system services that are added to your system and start when you boot the system. This can increase the boot time and increase memory usage.

Recompiling your own kernel cuts out the features that don't apply to your system

To check which services are started, take a look at the messages when the system boots. You might see a number of lines such as:

```
Starting Apache
Starting MySQL
```

Each one of these lines refers to a particular process that has been started on the system. Many distributions include utilities to configure which of these services are started, and you should use this tool to prune redundant entries. You can also stop services manually by checking your run level in /etc/inittab (look for a line such as id:3:initdefault:). You can then remove or rename the relevant entries in /etc/rc <runlevel>.d (such as /etc /rc3.d).

REMOTE X

One of the great benefits of the X Window system is its network transparency. What this means in real terms is that you can run applications remotely from another computer.

An example of this would be having a powerful and modern central computer with the applications installed, and then using slower computers on the network to access the applications remotely. The applications 'appear' on the remote computer but the central server does all the hard work and number crunching.

The benefit of this is that you will experience the processing speed of the fast computer on the slower computers. However, the vital ingredient is ensuring that your network is fast enough. If you are running on a conventional 10/100Mbit LAN, you should have no problems. You also need to ensure that the slower computers are actually fast enough to run X.

It is always a good idea to perform remote X connections with the secure shell (SSH). This will ensure that all traffic over the remote connection is encrypted, including various passwords and usernames.

To allow SSH to do this we will need to enable X Forwarding on the SSH server (on the fast computer). In /etc/ssh/sshd_config you should add the following setting:

```
X11Forwarding yes
```

To connect to the server and run an application you need to issue the following command:

```
ssh -X192.168.0.2
oowriter
```

This command will start a remote connection of the OpenOffice.org word processor from the server at 192.168.0.2. If you have problems connecting, you may need to install the xbase-clients package.

CONCLUSION

We have explored various methods of improving performance in lower specification computers. As with any subject like this, we have only had the space to cover a mere fraction of the tips and tricks available for squeezing that little bit more performance out of the computer and there are some other techniques you should look into. These include pre-linking, CFLAGs, hard drive adjustments, uploading firmware to devices, partitioning, and using smaller X servers such as SmallX (www.superant.com/smalllinux/tinyX01.html). A few minutes searching the Web via Google should bring up some of these topics and help you further your knowledge and maximise the performance of your computers.

Open For Business is all about how you can replace proprietary technologies with superior Open Source alternatives, thereby slashing costs, vastly improving speed and reliability and, perhaps even more importantly, allowing you to wrest back control of your IT infrastructure from the proprietary IT suppliers

Dancing with LDAP

This month's Open For Business is the third in our LDAP mini-series. As regular readers will know, we've been discussing how directory services can be used to make administration of your network easier. This series as a whole has been looking at how to replace every bit of proprietary software you may have in the network with better Open Source software, plus how to tie it all together.

We're going to take the beast by the horns and show you how to extend your growing directory to serve your Windows machines

Last month we covered the creation of a single user account base and single sign-on across all of your non-Windows systems. This month we're going to take the beast by the horns and show you how to extend your growing directory to serve your Windows machines (desktops and, if you haven't dumped them yet, the servers too).

CROWN JEWELS

If Linux is the poster-boy of Open Source, the Samba project is the crown jewels. Samba provides interoperability with the world of Windows on its own terms and can replace a Windows file server and/or print server and, for the purposes of this month's Open For Business, can replace a Windows authentication server.

Samba's main trick is that it has faithfully replicated all of the features of Windows style networking but neglected to include the license fees or the lock-out of other platforms. Its developers claim it has reproduced every bit of functionality of Microsoft's effort, even down to some of the bugs which are needed to keep things moving swiftly!

Your Windows desktops will happily talk to a Samba server all day (week, month, year). Because we're talking about Linux, the thing will never, ever crash. Try saying that about an NT-based server and listen to the laughter of your colleagues.

In terms of authentication, Samba can participate in a Windows controlled domain (Active Directory-based) or it can take it over completely. The latter instance is, of course, what we are really interested in.

Samba can read its account information from a number of places, including flat text files, MySQL databases, and LDAP servers. Here's how you do it.

First off, we need some schema additions to our OpenLDAP server. We've already covered schemas in an earlier instalment – they enable the server to associate certain attributes to the objects in its directory structure. The Samba team (especially Gerald Carter) have created a Samba schema which defines the attributes you need to authenticate Windows machines (it's included with the Samba documentation on your favourite operating system). You simply place this in the directory OpenLDAP needs to find it, and add a single line to your OpenLDAP configuration file telling it it's there. That's it.

NO REST

Don't put your feet up yet, though. We've now got to make a few configuration changes to our Samba configuration file.

A few of the changes are exactly those you'd make to tell Samba to be your domain controller anyway, so we won't linger, and there is tons of documentation covering this. You do need to add a few lines to the file that are LDAP-specific, though. You need to tell Samba that it's keeping its account database in LDAP, tell it the

HANDS-ON HELP

Mandrake-based Samba LDAP guide
www.mandrakesecure.net/en/docs/samba-pdc.php
Official guide provided by Mandrake covering configuring LDAP as a PDC with Samba. Although specific to Mandrake 9.x, it should provide clues for all types of distro.

Storing Samba info in an LDAP file
http://us4.samba.org/samba/ftp/docs/htmldocs/Samba-LDAP-HOWTO.html
HOWTO provided by the guys at Samba covering storing info usually stored in the smbpasswd file in the LDAP database.

Samba-LDAP-PDC How To (PDF file)
www.vcs.u52.k12.me.us/LDAP/The_SAMBA-LDAP_How-to.pdf
Print-out-and-keep guide to creating a PDC under Samba and pam/nss LDAP.

Configuring Samba as a PDC
http://us1.samba.org/samba/ftp/docs/htmldocs/Samba-PDC-HOWTO.html
Official guide from the Samba crew covering the basics of PDC creation - worth a read for background info.

address of your LDAP server, give it an administrative account and password to use (Samba needs to write back the changes your users make, like their passwords), and then bingo! Samba takes care of the rest.

Our servers are set to go and all that remains is to take advantage of some of the new attributes made available to us by adding the Samba Schema to our OpenLDAP setup. We're going to add some new attributes to the objects representing our users that we've been setting up over the last couple of months.

If Linux is the poster-boy of Open Source, the Samba project is the crown jewels

Several of the attributes that Samba needs are there already. You've given your users Unix-like UIDs, home directories, account names and passwords. You now need a few more entries like drive mappings (the way Windows maps a network drive to a letter of the alphabet), Windows group (Admins, Power Users, that kind of stuff), and, most importantly, NTLM password. Windows systems use their own kind of authentication which is quite different from the rest of the world and you need a special slot in your LDAP server to store it. By the way, Samba can do some neat tricks like syncing your Windows and other passwords every time your users change them on their workstations.

ALL DONE

You're now finished as far as your open systems are concerned. The rest is all the hoops your Windows machines make you go through in connecting to a new domain. Just remember that they don't give up easily, but they do eventually give up. And once they have, you'll never have to go through it all again (anyone who's ever been involved in even a Windows to Windows migration knows what we're talking about).

Your users won't see any difference. They sign on to the domain, just like always, and look in Network Neighborhood, which should look the same. If they change their password, it should work like it always did. One day they might notice the network hasn't been down recently but other than that they can go back to sleep. You, however, have bought yourself a much easier admin's life. And, of course, you've saved your FD a shedload of money.

We're finished with operating systems now. Next month we're moving on to applications and are going to show you how to extend your growing directory to bring LDAP to your Open Source email servers. Imagine managing your email accounts, aliases, email routing, email account password, etc. with the same user database you've been building for your servers and workstations. And we'll do all this without you buying an expensive, lock-in directory solution from one of the proprietary vendors. And all because it's simply better software. See you next month.

Mark Taylor is a lead consultant with Sirius. An early and continuing contributor to a wide spectrum of Open Source development projects, Mark is actively working on wide-scale deployments of Open Source technologies in a variety of business environments.

Mark is happy to reply to specific questions or queries arising from Open For Business. He can be contacted at mark.taylor@siriusit.co.uk

Sirius has an area on its website containing useful supplementary material connected with this article. You will find technical details, HOWTOs, FAQs and hints & tips from the UK's leading Open Source deployment specialists at: www.siriusit.co.uk/ofb/directoryservices/

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Linux certification with Red Hat

Red Hat's Certified Engineer qualification is certainly rigorous, writes Dave Fisher in the latest instalment of his regular examination of training issues

Given my previously expressed preference for vendor-neutral and independently managed public certification, some people might expect this article to be a hatchet job (or even one of those 'Red Hat is the new Microsoft' rants). I hope to disappoint.

That said, while I can't endorse every twist and turn of Red Hat strategy, I still consider the company to be one of the good guys and cannot but admire their achievement in building a strong training profile after some faltering early steps.

At present, the Red Hat Certified Engineer (RHCE) qualification is not only perceived as the pre-eminent Linux certificate by non-technical managers and HR specialists, but it also delivers a standard of testing to which others should aspire – it's well managed and based around practical tests on live systems. Testing may not be the only criterion for judging a certification programme but it is among the more important ones.

DETAILS, DETAILS

So what does Red Hat's certification programme consist of? In essence, it is two examinations – RH202 and RH302 – plus the two certificates issued for passing them (RHCT and RHCE respectively).

The flagship RHCE is designed to examine and certify professional system administrators managing production network services and security, whereas the Red Hat Certified Technician (RHCT) qualification is aimed at junior staff setting up and managing Linux systems on a pre-existing network. The RHCT is, in effect, a subset of the RHCE, but excluding the tricky networking and security topics.

Conveniently for Red Hat and its candidates, the above arrangement makes it possible for people who take and fail the full RHCE exam (RH302) to be awarded an RHCT certificate if they solved a sufficient proportion of the RHCT-related tasks.

The RHCT exam (RH202) lasts for half a day and comes in two parts. Section I provides a compulsory set of trouble-shooting and system maintenance problems to solve and lasts one hour. Section II deals with installation and configuration and lasts for two hours. Both exams provide hands-on practical tests of live systems. To pass the RHCT exam (RH202), the candidate needs to successfully complete all the troubleshooting problems in Section I and score 70% or higher on Section II.

By way of contrast, the RHCE Exam (RH302) lasts for the best part of a day and also comes in two parts, which have the same titles as the RHCT. In this case, however, Section I (on trouble-shooting and system maintenance problems) lasts two and a half hours, and is broken down into five compulsory and and five optional tasks. Section II (dealing with installation and configuration) is divided into RHCT and RHCE subsections and is an hour longer at three hours.

Both exams provide hands-on practical tests of live systems. To pass the RHCE exam (RH302), you need to successfully complete the five compulsory troubleshooting problems in Section I and score 80% for the entire section (ie including the optional tasks). You also need to score over 70% in both the subsections (RHCT and RHCE) of Section II.

TRAINING NOT NEEDED

One really important point about the Red Hat certification programme is that you do not have to take one of the Red Hat training courses, with which the exams are bundled, in order to take the exams. If your only concern is to get the qualifications, however, there may be advantages in accepting this classic sales device. You will get a more focused syllabus than you would on a deliberately educational course designed to teach generic Unix/Linux skills and you may get to interact with trainers who have passed the exams themselves and know the examination process intimately.

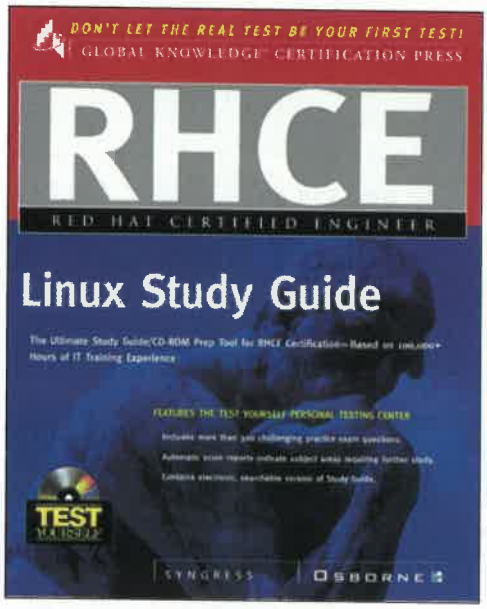
One really important point about the Red Hat certification programme is that you do not have to take one of the Red Hat training courses

But make no mistake – the RHCE is a tough exam for most people to pass. The RHCT may be somewhat easier but it still looks demanding when compared side-by-side with other proprietary exams at a similar level.

I am not too impressed by the awards that the Red Hat programme has attracted from sections of HR industry press, or the cheerleading from other self-interested groups (like young RHCEs themselves). That said, the scheme still looks like a quality offering.

I am, however, inclined to believe experienced industry professionals who have no need

Pass the exam and you'll have a certificate and, who knows, possibly a better-paid job



As with all training courses, there's a lot of printed documentation to help you through the RHCE exam

for the paper qualifications or official Red Hat endorsement but still describe the RHCE as a challenging test.

So when the cards are on the table, what are the advantages of taking the Red Hat path? In short, the qualifications have widespread commercial acceptance, there's a large Red Hat install base, and the exams themselves have a well thought out and up-to-date curriculum, along with a rigorous practical test regime.

In short, the qualifications have widespread commercial acceptance, there's a large Red Hat install base, and the exams themselves are well thought out

Red Hat itself describes the programme as the "most mature and respected", making the point that it is "updated for each new release of Red Hat Linux". Leaving aside the obvious caveats that "Red Hat Linux" is no longer a current distribution brand name and that "respect" depends on who it comes from, this scheme is undoubtedly the most up to date and mature of those currently on offer (the forthcoming Novell/SUSE offering may be equally current and will almost certainly claim a longer pedigree). By comparison, the Linux Professional Institute's (LPI) continued reference to Bind 4 looks less 'mature' and more Jurassic.

I'm as unimpressed by media 'surveys' that claim to prove an RHCT/RHCE salary advantage as I am by media awards

UP2DATE

There is, a down side of being up to date – becoming deprecated. Red Hat promises to continue recognising its qualification for at least one product cycle beyond the current one. This is no more or less than most proprietary schemes offer. But it should remind us that we are talking about qualifications in the use of a single, short-life, product. Neither the RHCT nor the RHCE certify that you should have a good conceptual or even practical knowledge of Linux, Unix or Open Source in general. That said, you are unlikely to pass either exam if you don't have a modicum of general Unix savvy to go with the specific product knowledge.

I'm as unimpressed by media 'surveys' that claim to prove an RHCT/RHCE salary advantage as I am by media awards. In so far as such findings are accurate at all, they reveal statistical trends that may not have much relevance in any specific practical context. On the other hand, with so many companies buying into the Red Hat brand for software, an RHCT/RHCE is likely to constitute an employment advantage in the short term.

In the end, the test regime is Red Hat's trump card. It gives their certificates more credibility than most proprietary alternatives and asks serious questions of the LPI's paper-based vendor-neutral scheme.

From my own perspective as a trainer, having a practical test at the end of the process is particularly conducive to teaching and learning fundamental concepts. By comparison, the paper-based multiple-choice exam tends to encourage dullard fact-grubbing and rigidity of thought.

Dave Fisher is currently Marketing Director of GBdirect Limited, a pioneer in Open Source training. David previously headed the company's training division, building on over 20 years' experience as a teacher, lecturer and examiner across a wide range of educational institutions.

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www.kemputing.net

B-Linux User Group
020 8674 0072
lux-integ@b-vol.co.uk

blueU.com
01225 483 100
www.blueu.com

Griffin Software
+353 (0)1 462 2277
www.griffinsoft.com

Bracknell & Wokingham College
01344 460 200 x390
www.bracknell.ac.uk

Bromley College of Further and Higher Education
020 8295 7000 x7122
http://ce.bromley.ac.uk/linux

Cerco Training
0500 828 274 / 01270 626 300
www.cercotraining.co.uk

Computer Park
01536 417 155
www.computerpark.co.uk

Enterprise Management Consulting
020 8659 2000
www.emcuk.com

First Alternative Training
01636 893 673
www.firstalt.co.uk

First Technology Transfer
020 8669 0769
sales@ftt.co.uk

GBdirect
0800 651 0338
info@gbdirect.co.uk
http://training.gbdirect.co.uk

Hewlett-Packard
01344 363 311
www.hp.com/uk/education

ICS London
0800 587 6611
www.icslondon.com

IBM UK and Ireland
0845 758 1329
ibm.com/services/learning/uk

Ingenio
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www.ingenio.co.uk

Jason Clifford Consulting
0870 746 0758
www.linuxconsultants.ltd.uk

Kingpin Linux
01732 866 989
www.kingpin-linux.com

Learning Tree International
0800 282 353
www.learningtree.co.uk

LinuxIT
0117 905 8718
linuxit.com/training.html

LOOK Systems
01756 749 922
www.looksystems.co.uk

New Horizons
020 7684 2000
sales@nhlondon.com

October Systems
01440 713 696
www.october-systems.co.uk

Open Minds
0121 313 3943
www.openminds.co.uk

NEOS IT Training
01905 726 222
www.neos-it-training.com

PTR Associates
0118 979 4000
www.ptr.co.uk

QA
0870 906 0090
www.qa.com

Quanta Training
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www.quanta.co.uk

Raditex AB (Sweden)
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www.raditex.se

Red Hat Europe
01483 734 995
europe.redhat.com/training

SGI
0118 925 7755
www.sgi.com/global/uk

SkillAdvance Training
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www.smartcertify.co.uk

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01202 319 434
www.sos-training.co.uk

Spring.com
0870 600 8484
www.spring.com

StarTEXT
01458 831 103
training@startext.co.uk

StayAhead Training
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www.stayahead.com

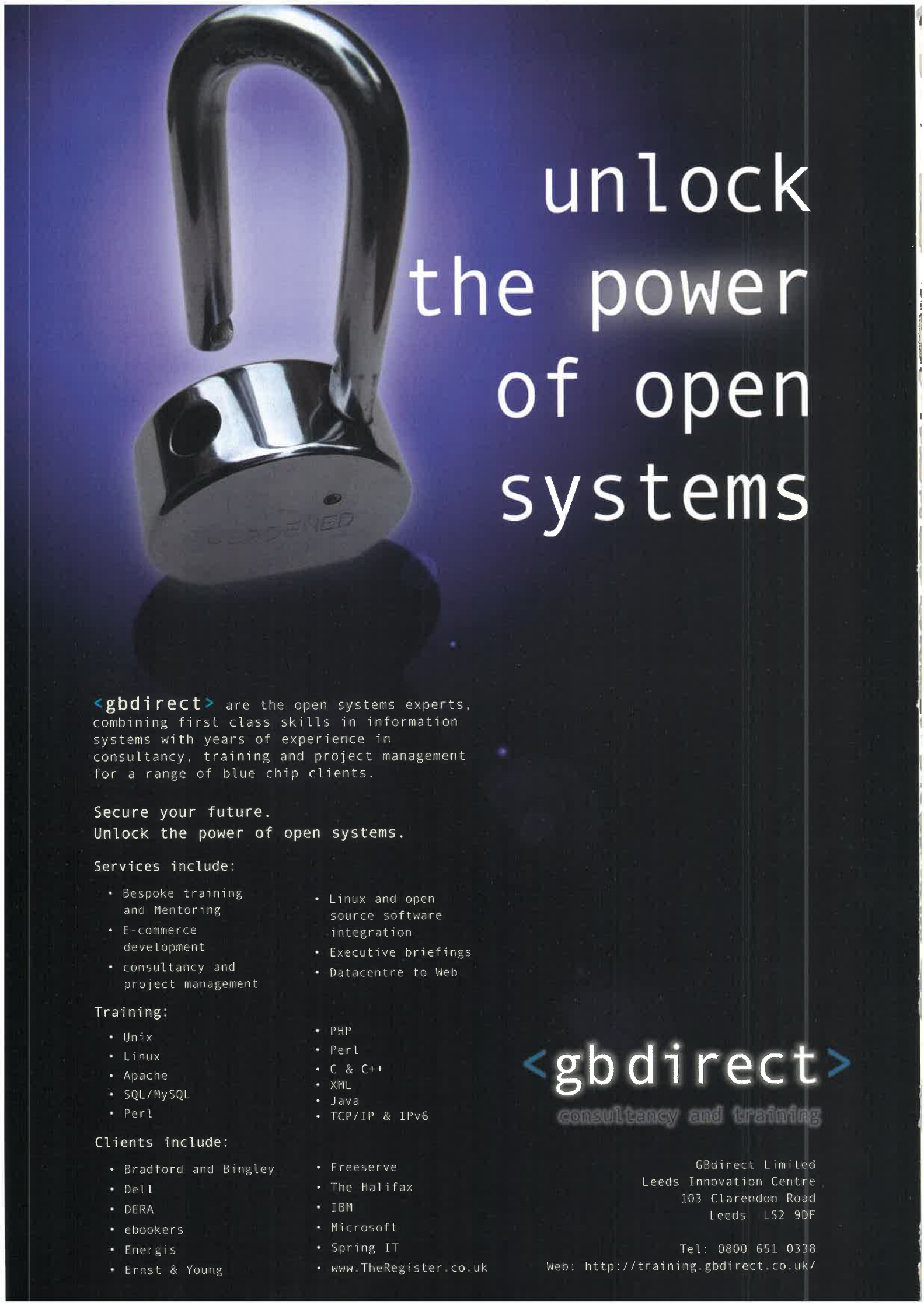
thorNET
01454 854 413
www.train-linux.co.uk

TopQuark
01689 834 381
www.topquark.co.uk

Training Camp (UK)
08700 775 501
www.trainingcamp.co.uk/linuxuser

Unipalm
0870 443 9099
www.unipalm.co.uk

Visualsoft UK
01642 246 996
www.beginners.co.uk



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Decoding Shakespeare

A strange tale of political intrigue, the Alexis de Tocqueville Institution and the provenance of Shakespeare's plays, as told by The Luddite

We are all aware of those IT consultancies and research organisations that have founded their business on producing reports on the comparative virtues of one company's products over another's. The reports are disseminated through the trade press and around the Net, and are often quoted as the justification for buying one product or the other. Later, we discover that the reports have been sponsored by one of the interested parties, and that the terms of reference have been ever-so slightly skewered in favour of the sponsors.

THEORY NOT A FACT

A more or less sophisticated form of this kind of disinformation is practised in government. The political parties receive funding from commercial entities, and lobbying companies are used to bend the ear of our representatives. During the last US presidential election, the Bush campaign was in receipt of US$447 million from corporate sponsorship. Washington, like Westminster, is surrounded by think tanks and lobbying companies, whose *raison d'etre* is to influence our elected representatives and to persuade them to legislate for or against particular interests. The think tanks claim an academic detachment, that the sponsorship they receive is incidental to the facts they report. Evidence tends to suggest otherwise.

A more or less sophisticated form of this kind of disinformation is practised in government

According to David Callahan, writing in *Washington Monthly*, June 1999, the CATO Institute's social security privatisation project was "underwritten by US$2 million or more in corporate money, much of it from financial service companies which would directly benefit from privatisation". Callahan noted that: "The campaign against the 1997 Kyoto global warming treaty waged by right wing think tanks is another area where corporate America has heavily invested in policy groups that advance its interest. The Competitive Enterprise Institute (CEI) has been a particularly aggressive advocate of the notion that global warming is a 'theory not a fact.' Since 1991, CEI's budget has grown from less than US$1 million to over US$4 million."

The Bush administration's rejection of the Kyoto treaty has worked to the short term advantage of many corporations, but has displayed a breathtaking indifference to public and scientific opinion in every other part of the world.

WINNERS AND LOSERS

On September 18, 1999, at the height of the Microsoft antitrust trials, the *New York Times* uncovered the relationship between the Microsoft Corporation and a conservative think tank that calls itself the Independent Institute. The Independent Institute, which professes adherence to "the highest standards of independent scholarly inquiry", had published a series of full-page newspaper advertisements entitled "An Open Letter to President Clinton from 240 Economists". The advertisements supported Microsoft's claim of innocence in the face of federal antitrust charges. Microsoft had been unfairly victimised by the Department of Justice. The advertisements were a disinterested assessment of the realities of the case.

The advertisements supported Microsoft's claim of innocence in the face of federal antitrust charges. Microsoft had been unfairly victimised

The New York Times revealed that Microsoft had not only paid for the advertisements but was also the single largest donor to the Independent Institute, providing 20% of its funding.

Distro wars

Many of the big distro companies and organisations have made new releases, but which is best for you or your business? Richard Smedley investigates

The last month and a half has seen distro after distro thump down on the desk of *LinuxUser & Developer*, as spring-release fever runs its course. Virtually every one of the major distro companies and organisations has made a new release, from Red Hat to Gentoo. All of them take advantage of cutting-edge software released in the past year, which usually equates to the 2.6 kernel, but also takes into account new releases of the KDE and GNOME desktop environments.

It all adds-up to yet another milestone in the evolution of Linux and nobody can criticise or even praise Linux unless they've seen what's now on offer. The new distros put to shame the equivalent releases of this time last year, which shows how fast-moving the world of Open Source is compared to that of proprietary software.

Some of the distros we mention are available for non-Intel architectures but, for the purposes of fair comparison, we installed only the x86 versions. All have at least some pedigree as servers, but are currently making noises about the desktop market, so this is what we primarily focussed on.

GNOME comes by default with Fedora, along with a modified rendition of the Bluecurve theme

MAGIC MANDRAKE

Mandrake 10 is available in three flavours: Discovery, PowerPack and PowerPack+. The latter adds various useful bits of server software onto Powerpack's already busy desktop package and all in all it's a weighty box when bought retail because there are eight CDs, a DVD and two printed manuals.

A fair portion of the included Server Administration Guide seems taken up with config wizards and other such fripperies. It is to be hoped that not too many servers are being set up by wizard, implying as it does a dangerous lack of underlying knowledge, but Mandrake's approach to config and installation does have the advantage of getting up and running quickly.

To be fair, the manual does go into a little more depth for some services and makes a reasonable attempt at explaining various networking concepts. The Starter Guide, shared with the un-plussed desktop Powerpack box, does a fair job at covering the desktop instalation, configuration and use in the same vein. This is useful enough, but neither book measures up to the equivalent from SUSE, which has led the pack for years.

Mandrake 10 uses KDE 3.2 as its default desktop, making for a clean and refined feel

We were also sent a copy of Mandrake 10 Discovery (£34), a two-CD selection of Mandrake boxed with a copy of the Mandrake Move CD – Mandrake's answer to Knoppix – and a slim user manual aimed at those migrating to Linux for the first time.

Tabbed browsing with Konqueror and email with Kmail is introduced in the manual, after which there's a whirlwind tour of OpenOffice.org. Fortunately the manual also gives pointers for obtaining further documentation

Mandrake 10 Discovery's box has friendly summaries of what GNU/Linux and Free Software is all about, and the joys of the Mandrake distribution. As well as KDE, OpenOffice.org and GNUCash, proprietary software such as Adobe's Acrobat Reader and RealPlayer 8 is included to presumably make MS Windows users feel at home.

PLUS KDE

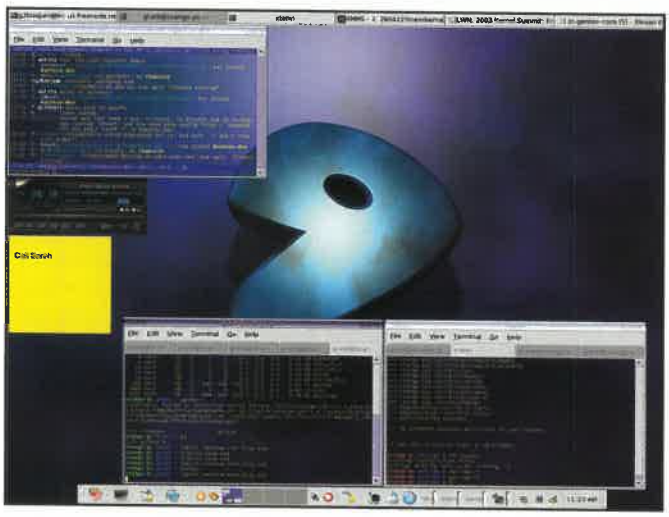
Originally Mandrake was little more than "Red Hat plus KDE," to quote its (few) critics. It has since combined vociferous support for Free Software with a contradictory sprinkling of proprietary packages, all mixed up with a powerful set of config tools and a straightforward but slightly clunky installation system. Disk partitioning is done well and hardware detection remains good, though our test machine's old ISA soundblaster card was tagged for later configuration with sndconfig.

Package management is handled by RPM Drake (called Program Manager in the Control Centre menu), and this is a front end to urpmi. This handles dependencies across the RPM packages, avoiding RPM hell, and doing the downloading and configuring for you. Whatever the case, RPM Drake's searchable database makes finding packages easy, so long as you know what you want.

In all, there is little missing and plenty of special Mandrake goodness to enjoy, such as Mandrakelocale, which allows you to change the language of all apps (GNOME, KDE, OpenOffice.org, Mozilla, etc) with just one click. Font handling

is another Mandrake strength carried over into this release, although speed and stability are the main improvements.

Occasionally it has been suggested that although Mandrake distros are packed full of the latest software, they are released before they are ready. No more – this release is a desktop you can deploy across your company (provided you don't have flaky hardware that won't play with Mandrake 10, but then you wouldn't be doing a large roll-out without proper research, would you?).



There's a huge variety of choice with Gentoo. The user behind this screenshot is running Xfce4

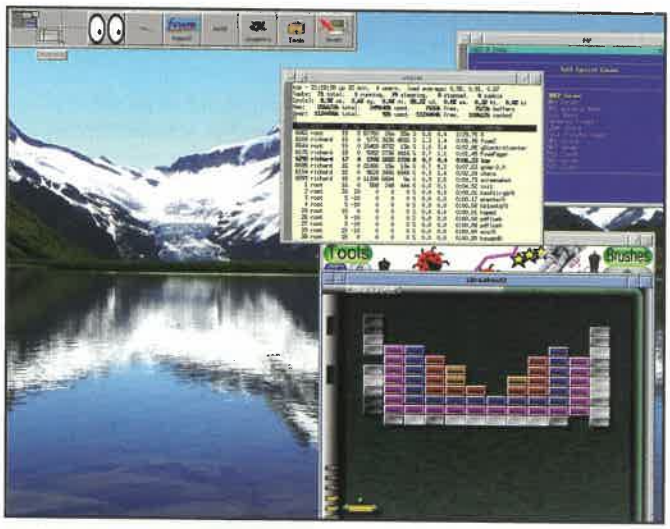
Another handy improvement is Magicdev auto-play tool – insert a CD or DVD and Magicdev launches the appropriate application. The new Control Centre also helps set up networking services such as NFS mounting and SMB mounting on remote Windows directories.

Included support is one month's membership of Mandrakeclub at Silver level. This equates to the latest Mandrake software and three months of Mandrakeonline Personal Solutions, giving you updates by clicking on the little button that Mandrake has added to the KDE taskbar. 90 days of Server Scope Web support (also including five incidents of free telephone support) covers the Apache Web server, SAMBA, NFS, Postfix, FTP server, SSH server, LDAP server, DNS, DHCP and SQUID. This should ensure you get past any problems quickly.

SUPER SUSE

Now that the venerable German distro is under American control, what changes do we see? When the giant Novell followed its purchase of Ximian with that of SuSE (now fully capitalised as SUSE), many predicted interference with their beloved, European, KDE-centric distro. But this has not come to pass. However, there is no doubt that the company which beat MS in the 1980s to dominate the networking market has big plans to go up against Sun, HP and IBM in the GNU/Linux market.

Opening the box we find five installation CDs, along with the respective source discs, and two double-sided DVDs – one containing 32-bit and 64-bit installation packages, the other the source code for all of the Free Software packages. As usual for SUSE, two thick manuals – a User Guide and an Administration Guide – contain all the information needed to get you started, and more.



SUSE 9.1 using the Fvwm desktop makes for a very speedy system which is ideal for older hardware

YaST (Yet another Set-up Tool) is SUSE's all-singing, all-dancing, modular config tool, which handles installation as well. The original text-based YaST is available to power users for advanced installation options but most will take the standard GUI install which utilises YaST2. For what it's worth, YaST is now under the GPL, having previously been licensed to prevent commercial rivals using the code, so can only get better.

SUSE's install doesn't take the 'four clicks and you're in' approach of some upstart desktop distros, yet it is not as cumbersome as the Mandrake's installer. Sensible options are available at every stage to either accept the default or an alteration option. A wide range of hardware was detected with problems only encountered when attempting an install on a Sony Vaio TR2 – a laptop only recently available outside Japan. As well as failing on the wireless card (see below), the X window system – which could initially only be accessed as root! – would not use the full width of the laptop's widescreen display. Some research revealed that other users had fixed this satisfactorily by buying proprietary X accelerators.

SUSE has long favoured KDE but we also tried a minimal GUI install (no KDE or GNOME), where it defaulted to the easy-to-use FVWM2, with KDE menu options a right-click away.

SUSE's KDE has always been well-integrated and is the standard desktop, with GNOME available as an optional extra, but in future we should expect to see stringent attempts at GNOME integration from Novell, with a little help from Ximian. However, it's likely KDE will remain unharmed in deference to SUSE's faithful European audience.

Kaffeine, the default media player for videos and streaming Web content, showed instability that is worrying in a product aimed at a professional market. In fact, multimedia is one of SUSE's let-downs as, out-of-the-box, DVDs could not be played and playback was a little jerky, even on a fast machine. As well as lacking the decss library for DVD playback, SUSE no longer ships the binary Nvidia drivers (although YaST will help you fetch them online), nor a number of other proprietary drivers for various wireless cards. Nevertheless, other proprietary software, such as databases, are included, creating a confusing state of affairs.

Aside from the Sony laptop, SUSE worked with all the hardware it was tested on, but there have been reports of it not working on some kit, such as Highpoint 404 raid controllers. Checking the various forums before purchasing may be a good idea. Of course you can also install over the Net from http://suse.com, so you can quickly check your hardware compatibility.

On the whole, everything felt much more responsive with this release of SUSE, due not just to the 2.6 kernel but to steady improvements in the C library and throughout the distro. Even the new KDE has improved its performance. If you don't need a box of manuals, or support, SUSE is available free of charge over FTP although it is the only one of the four reviewed distros not to be downloadable as an ISO. Support may be purchased for downloaded editions.

Despite its flaky edges and frequent release cycle, SUSE is a good desktop distro and an easy-to-maintain server OS too. Online updates add to security and YaST remains a robust config tool, with the possibility of further and rapid improvements now it is under a free license.

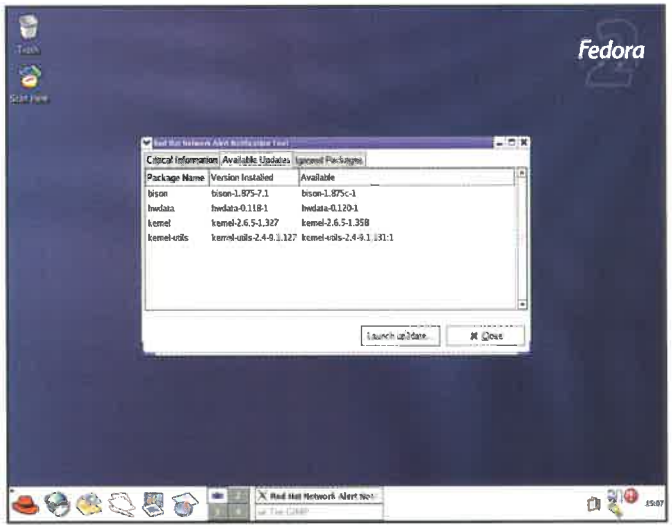
PUTTING ON THE TOP HAT

Did Red Hat free-up the world's favourite distro or get the community to do its testing for it? The Fedora project has not been without controversy, but as well as throwing a lifeline to Red Hat users abandoned by the company's decision to cease supporting older distros, Fedora

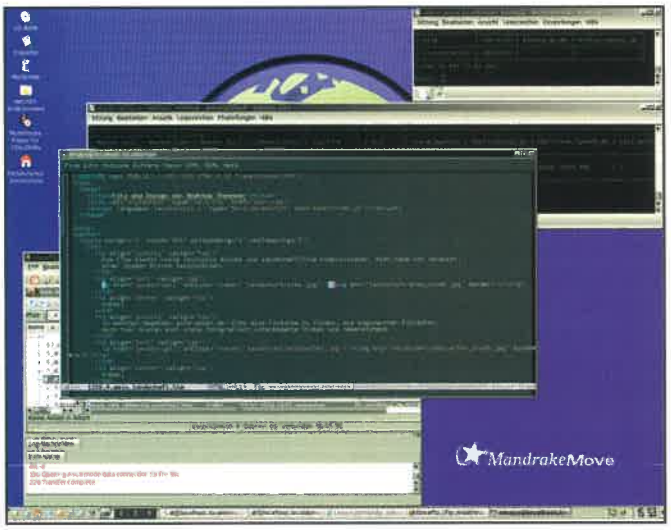
Core 1 garnered praise purely on its own merits.

Since Fedora 1's launch, Red Hat has had a change of focus and released a desktop distro for the corporate market, which we will be reviewing next month. But for those able to provide their own support, we turn to the latest community-sponsored release – Fedora Core 2.

The familiar Anaconda installer looks as clean as ever and makes light work of installation under a number of diverse circumstances. The configuration tools do their job well and you are soon set up with a desktop, workstation or server as desired, with minimal distracting extra choices of software or configuration. Only



Up2Date is carried across from Red Hat for Fedora but it's not without problems (usually crashes or freezing)



Mandrake Move lets you take Linux and your data with you when you move from PC to PC

when running a desktop do you notice absences – Red Hat's tip-toeing around the legal mine-fields of patents and reverse engineering means there's no MP3 playback software or DVD decoders. These can soon be fitted into place (Google will tell you how), but it's annoying in comparison with some of the other distros available.

One nice thing about Fedora is its use of the GNOME desktop. GNOME continues to set the standard for the corporate desktop, offering unrivalled accessibility features and a consistent interface. The highlight of GNOME 2.6, provided here, is the eagerly anticipated arrival of spatial orientation in the Nautilus file manager. Abandoned by Apple after 20 years as a core feature of Finder, spatial orientation gives an experience close to the real-world handling of documents. Best of all, the window will remember exactly where you left it and at what size you left it after you closed it, just as real-life objects stay where you put them (for the most part). This contrasts with the browser-based approach of most file managers, and is GNOME's first real step forward in this field since it adopted the incomparable Midnight Commander for its first release.

The professional-looking Bluecurve theme fronts a distro that runs speedily on a 2.6.5 kernel. Mozilla 1.6 is the default browser and email is provided by Ximian Evolution, the powerful Outlook-replacement which is a country mile ahead of KMail.

The newly Bluecurved OpenOffice.org provides the office suite, as elsewhere, and this again benefits from the accessibility tools added by Sun's engineers. It is only in the area of software installation and package updates – with up2date breaking easily – that Fedora lets itself down in comparison to the competition. However, Fedora's competent config tools add further to the overall package.

GENTOO 2004.1

Gentoo is the only distro here to adopt a vaguely sensible numbering system – one that will stand the passing of years. This distro also differs from the other three because it's primarily a source-based distro – everything you wish to install is downloaded and compiled on the fly, with all compile-time options chosen by you and not some package maintainer who has the differing needs of a million users to balance.

Gentoo will never suit the average business desktop but if your developers need the latest versions of various libraries and packages, or some of your workforce have to use bleeding-edge packages in order to run a particular new or development version of software, then Gentoo is one way of keeping up to date on the desktop.

The efficiency of a self-compiled distro can also get more mileage out of older hardware, giving you environmental brownie-points as well as stretching that hardware budget. Gentoo runs on the widest range of architectures of the four distros examined here, but for review purposes we will stick with x86.

Make no mistake – the admin who rolls out Gentoo needs to know their stuff. Gentoo is all about choices and you will need some knowledge in order to make them well. The installation disc drops you in a root shell and your choices begin. Following the handbook on the disc, or on-line, there are 10 stages to go through, which get you to a certain state:

After step one, you'll be in a working environment ready to install Gentoo. Step two sees your Internet connection made ready to install Gentoo (this can be optional in certain situations), whilst step three sees your hard disks initialised to house the new installation. Step four ensures your installation environment is prepared and you are ready to chroot into the new environment and step five sees the core packages, which are the same on all Gentoo installations, installed.

Step six takes care of kernel compilation and step seven sees the writing of most Gentoo system configuration files. Step eight finds your choice of bootloader being installed and configured, and step nine is when necessary system tools (which you can choose from a list) are installed. Step ten finds you logged into your new

Being a died-in-the-wool hacker is de rigeur with Gentoo, and the use of IRC is practically mandatory

Distro	SUSE Professional	Fedora Core2	Mandrake 10 Powerpack+	Gentoo 2004.1
Price	£59	Free download	44.9 Euros	Free download
Kernel	2.6.4	2.6.5	2.6.3	2.6.5
KDE	3.2.1	3.2	3.2	3.2.2
GNOME	2.4.2	2.6.0	2.4.2	(2.6.1)
Apache	2.0.49	2.0.49	2.0.48	(2.0.49)
MySQL	4.0.18	3.23.58	4.0.17	4.0.18
OpenOffice.org	1.1.1	1.1.1	1.1.0	1.1.1
Xfree86	4.4 RC2	XOrg	4.3.2	4.3.0
Ximian Evolution	1.4.6	1.4.6	1.4.5	1.4.5
Mozilla	1.6	1.6	1.6	1.6

Gentoo installation (phew!).

Note from the above that you compile your own kernel during installation. This means your kernel is optimised for your specific hardware and will be speedier than the bloated, generic kernels that the big distros ship. Note also that you choose your own system tools, instead of just accepting, for example, YaST or *Drake, as in the case of SUSE or Mandrake. To a certain extent, your choices build an individual distro, which is why Gentoo bills itself as a meta-distribution.

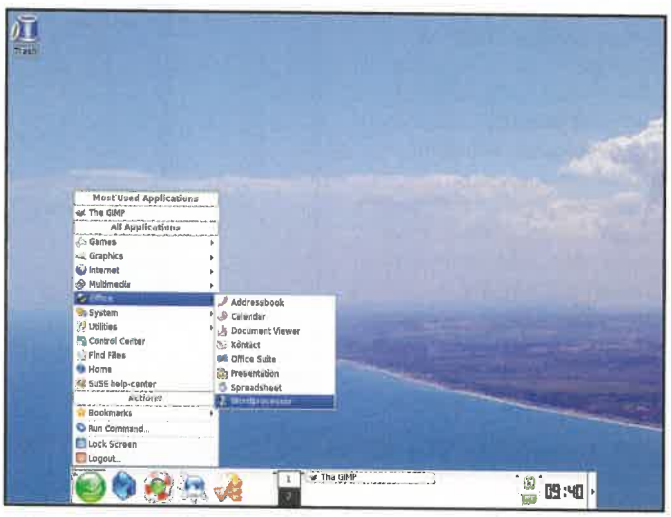
By this point in the review, you will either be intrigued to try Gentoo, or will know it is not suitable for your situation. It definitely requires a certain frame of mind and, of course, a large amount of spare time.

FROM CD

Of course you do not need to install from CD and the most popular alternative is a cross-install from another Linux partition, but you could also install from a netbooted environment, from a rescue floppy, or even from booting Knoppix and copying across the packages you need to get started.

Portage, the package-maintenance system which Gentoo uses, is written in Python, meaning you can easily read and modify the code for further flexibility. For what it's worth, Fedora's Anaconda installer is also written in Python, and there has been talk lately of translating Debian's installer scripts from Perl. Portage makes installation of software, or even upgrading the entire system, as simple as any binary package management.

To get up and running quickly, users who don't fancy a 24-hour install can instead try the Gentoo Reference Platform (GRP), a snapshot of prebuilt packages to speed up the installation process. The GRP consists out of all packages required to have a fully functional Gentoo installation, including lengthier builds (such as KDE, XFree86, GNOME, OpenOffice.org and Mozilla). These have been released as part of 2004.1 but will not be updated over the lifetime of this release – to keep up you have to choose source. One can choose a Stage 1, 2 or 3 installation, giving choice between total control and having the work done for you. A Stage 3 is necessary for GRP, or if you have no network connection.



There's little doubt that SUSE 9.1 uses KDE 3.2 to its full advantage – a great-looking desktop!

The Gentoo desktop was the fastest by far, something particularly noticeable in KDE. But was it worth the hassle? Well, using a Stage 3 install, GRP, and the excellent handbook, it wasn't that bad – certainly nothing to be too scared of. If you take this short cut, everything can subsequently be recompiled to be optimised for your system. However, long-term maintenance of a Gentoo installation can be problematic, particularly if you are an inveterate tinkerer whose motto is 'fix it till it breaks'.

If you need the speed, the choices, or the latest packages, this is a vastly better choice than the one-size-fits-all SUSE, Fedora or Mandrake. But if you just want to get up and running with fairly new packages and minimal effort, you should look to the binary distros.

CONCLUSIONS

For many people the distro picks itself. If your company has taken the Red Hat road, nothing about Fedora Core 2 will dissuade you from sticking with it, unless you need the power or support of one of Red Hat's enterprise offerings (or the White Box imitation for those without the deep pockets or support needs). Fedora makes a reasonable corporate desktop, save for the lack of multimedia apps which find a valid use in many companies. Fedora also makes a solid server, with everything where Red Hat-experienced admins expect to find them.

With the community support of its massive user base, it is difficult not to recommend Fedora for the home user. Getting DVD and MP3 playback up and running is well-documented, for example, and countless forums give further support. Configuration is straightforward.

Similarly Mandrake and SUSE tread their familiar paths and will probably not win any converts from opposing camps. Mandrake seems to have improved incrementally but SUSE's point release, though worthwhile, perhaps fails to justify the upgrade cost for home users, though as a server or developer's workstation it is well worth the price of admission. SUSE will be worth watching closely as Novell's intentions become clearer.

To those starting with a nearly clean slate, the choice is harder. SUSE still throws nearly every package possible at you and can be a voyage of discovery. Its installation and hardware detection earn it high marks and everything is configurable, from the GUI as well as the shell. Only a few ragged edges – and the default lack of DVD decoding – lower its mark.

SUSE and Mandrake will both non-destructively resize NTFS partitions, should you wish to dual-boot with an already installed copy of MS Windows XP. Both are good choices for KDE fans. Mandrake has done more than SUSE to integrate GNOME, though SUSE's GNOME is perfectly usable.

Mandrake has Nvidia's proprietary drivers but both it and SUSE have a fair amount of non-free software which the truly ethical Free Sofware fan might find troublesome. Fedora and Gentoo lack such extras.

At the end of the day, all three binary distros earn a recommendation, even at shrink-wrap prices, but Gentoo – the joker in the pack – will be of interest only to a self-selecting few. You pays your money, you takes your choice.

KEY LINKS

SUSE:
www.suse.com
Fedora:
http://fedora.redhat.com
Mandrake:
www.mandrakelinux.com
Gentoo:
www.gentoo.org

WINDOWS EMULATION

VMWare 4.5 CrossOver Office 3

Getting Microsoft Windows programs to run under Linux has never been easier

Emulating Windows under a Free Software OS is a topic almost purpose-built to split the community down the middle. To those for whom running any kind of proprietary software is anathema, the battle lines are clearly drawn. Even those who take a softer attitude will admit to reservations about running programs like Microsoft Office under Linux. The fact this obliquely enforces Microsoft's monopoly is no small part of the argument.

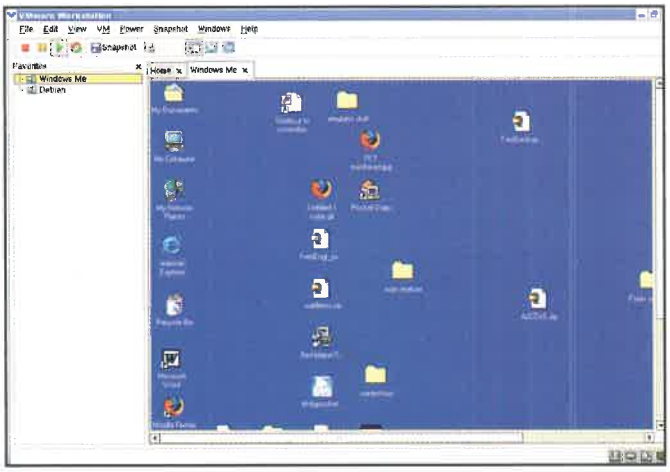
Regardless of the arguments for and against, the software to let Windows programs run on Linux is out there and is getting better all the time. The two examples examined here, which happened to see simultaneous new releases, are VMWare 4.5 and CrossOver Office 3.

The two programs take radically different approaches to reach a broadly similar goal. VMWare emulates an entire PC hardware system within software. It isn't just a Windows emulator because practically any x86 operating system can be run on this virtual system, including other Linuxes and BSDs.

In contrast, CrossOver Office is a proprietary front-end for the LGPL Wine project. Wine provides a new API layer which catches Windows calls and converts them into Linux kernel calls instead. CrossOver merely adds a GUI interface to make administration simpler (Wine usually works at the command line), as well as a large collection of scripts which are designed to facilitate easy installation of Windows programs and work around various bugs which arise during the process.

Both programs are minor miracles when the sheer complexity of the tasks they perform are considered. That a program like VMWare works so flawlessly is downright astonishing. It works by creating a couple of files on the hard disk which store the file system and hardware settings for the emulated PC. A GUI front-end lets the user switch on or off each virtual machine, which boots up into its own BIOS, just like a standard PC. Installing an operating system is then a matter of booting the virtual machine from CD/DVD-ROM or floppy. Installation then proceeds as usual, with the OS being completely unaware it is running under a virtual machine. From then on, the virtual machine boots straight into the operating system.

The virtual PC's underlying hardware, in terms of the motherboard chipset and CPU, is recreated in software, although in some cases pass-throughs to genuine hardware are provided. The virtual PC's CD-ROM and



Running Windows in a virtual machine courtesy of VMWare is the best way of working but requires a powerful PC

THIN CLIENT SOLUTION

LTSP-4.0

Lets redundant, silent, underpowered machines function usefully as thin clients

Whilst major distro updates and point releases for glamorous packages such as KDE garner a great deal of public and press attention, seriously usable community projects often get ignored, perhaps due to some misunderstanding as to their true functionality or in the mistaken view that such projects only appeal to a small niche of geeks.

The Linux Terminal Server Project (LTSP) is one such long-running project which well deserves a great deal more attention, given that it really does have a lot to contribute both environmentally and economically to businesses, schools, government agencies, homes, and just about anywhere that efficient computing solutions need to be deployed. Fortunately, with the recent announcement that Novell is showing a keen interest in LTSP, this incredible project will certainly soon join the likes of KDE and GNOME within the GNU/Linux hall of fame.

In short, LTSP enables low cost, low powered and often noiseless machines to function as thin clients, running typical GNU/Linux apps such as Mozilla or OpenOffice.org on a more powerful server. This solution scales well and it's totally possible to run maybe 40 workstations (perhaps cheap, silent Mini-ITX-based boxes) from a low-cost dual Pentium server. The benefits are obvious and LTSP has been successfully deployed across Brazil, providing free Net access for all.

LTSP has certainly come a long way since *LinuxUser* first checked it out a few years ago. Installation and configuration have both been seriously streamlined and the accompanying Etherboot package, which is needed to kickstart each workstation, is much easier to deal with. Etherboot runs on the workstation and is all about grabbing a kernel from the server and throwing it into local memory. After that, LTSP takes care of the local environment, loading necessary modules, mounting filesystems and starting X if so configured. Etherboot is only one option amongst such things as PXE or Netboot, but it's sufficiently flexible and easy to use from both NIC Bootrom or floppy disk. In this case, the floppy disk, generated by Marty Connor's excellent rom-o-matic.net site, was the quickest solution.

If you're fortunate enough to have a recent Gentoo at hand, installation couldn't be easier. A simple emerge ltsp-core takes care of everything, installing a

floppy drive are mapped straight through to /dev/cdrom and /dev/floppy, for example (the paths can be changed), and USB devices can be connected straight through to the virtual machine when attached.

Once Windows is installed and VMWare switched to full-screen mode, the user will have a hard time noticing that they're using an emulated PC. There's a slight flickering when the mouse is moved but, other than that, the virtual machine is as speedy as its real-life counterpart. There's absolutely no software incompatibility. We installed Windows Me, 2000 and XP at various stages and, apart from a longer than standard boot time for 2000 and XP, each installation ran without a hitch. Special driver software is provided by VMWare to speed-up the emulation process and it works a treat.

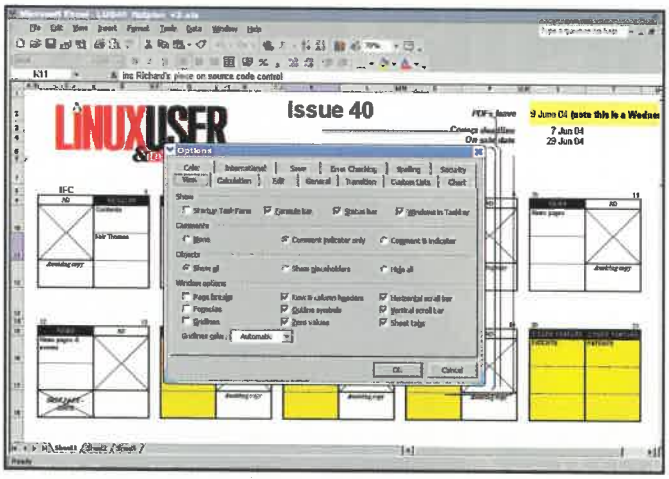
The only problem is that, unless used on a very powerful PC with a lot of memory, the underlying host OS on which VMWare is running is left virtually unusable during emulation. On a AMD Athlon 1800+ system with 512MB of RAM, switching back to Linux meant a lengthy wait whilst the disk thrashed (presumably because of swap file activity). Linux would then run smoothly but switching back the emulated machine meant yet more furious disk access.

Whilst CrossOver Office can theoretically run any Windows application, or at least attempt to, the developers' hard work has been put into running Microsoft Office along with other popular Windows programs such as Lotus Notes and Adobe Photoshop. Browser plugins can also be run, providing users with the likes of Macromedia Director, for example.

Both Office 2000 and XP can be installed and run quite happily, although there are various caveats and bugs which CodeWeavers, the company behind CrossOver, points out on its website. The bugs that crop up tend to be more annoying than devastating.

Most Windows programs run as speedily as they would on a Windows system with perhaps slightly longer start-up times. On our Red Hat Enterprise WS test machine the on-screen fonts looked a little worse for wear and not as clean as on a genuine Windows workstation, but this is hardly a seriously criticism.

CrossOver wouldn't initially install on our Red Hat system until prelinking and ExecShield were deactivated. These two features optimise the file system and provide kernel security



Most major Windows apps run fine in CrossOver but annoying glitches, like graphical corruption, are not uncommon

respectively, and their removal is less than ideal. The Wine team is currently negotiating with Red Hat developers to overcome this problem.

Although CrossOver is designed to make things easy, the user still needs to have his/her wits about them. For example, we attempted a minimal install of Internet Explorer 5 which then caused Office XP's online registration routine to crash. The solution was a full install of Internet Explorer 6, but these kind of issues (typical Windows gotchas, we guess) mean things aren't as easy as they could be.

VMWare is expensive at US$189 for an online purchase. CrossOver Office Standard, which will be adequate for most workstations, costs US$39.99. VMWare is certainly a more comprehensive solution (and you can also try out those interesting distros in a virtual machine), but for occassional forays in the world of Windows software, CrossOver does the job fine.

Reviewer: Keir Thomas

THE VERDICT

Product: VMWare 4.5
Price: US$189
Contact: www.vmware.com
Pros: Comprehensive solution
Cons: Requires a powerful PC

THE VERDICT

Product: CrossOver Office 3 Standard
Price: US$39.99
Contact: www.codeweavers.com
Pros: Inexpensive and (largely) fuss-free
Cons: Glitches and bugs can get annoying

dhcp server, xinetd and a raft of LTSP packages. Users of other distros are well served, too. Thankfully the days of tweaking distro-specific LTSP versions are over and installation and configuration issues are now well separated. A text-based installer takes care of specific LTSP packages and the new ltspcfg tool makes short work of configuring all the services such as NFS, tftp, dhcp, xinetd and LTSP itself. Of course, it's equally possible, by checking out the rather dated documentation, to configure all services by hand. LTSP is surprisingly easy to work with and the updated format for the main lts.conf configuration file does make a lot of sense. But if you're upgrading from a previous install, it's worth noting that simply reusing the previous lts.conf simply won't work.

Workstation configurations are described in the lts.conf file sitting on the server. Settings include basic hardware configurations for the mouse and X server. The notion of runlevels in earlier lts.conf manifestations has been replaced by the much more flexible screens approach. By defining several screens, it's possible to mix telnet sessions (obviously to the server) with ssh or X Window sessions across all the available virtual ttys. LTSP can also be configured to take advantage of a more powerful workstation, running apps locally. There are some security issues involved, as the required SSH keys are accessed via NFS, and running local apps is far from an elegant solution. But it does work.

In some ways, it's safer to trust one's own handiwork with the various configuration files, particularly if the thin client's server is performing other useful tasks. However, despite a few bugs, the ltspcfg seems solid enough and does an excellent job of displaying the status of various services and accessing configuration files in an intuitive manner. Unfortunately, ltspcfg does fall down when it comes to creating the default lts.conf file.

Configuring and testing LTSP with a large number of thin clients can be a frustrating affair, as services must be tweaked, and restarted before the client in question is rebooted, but older documentation provides excellent troubleshooting advice (seeing clients boot straight to GDM is well worth the bother).

Early Pentium clients running off a dual PIII server feel totally responsive under most common apps, and it's unlikely any user will feel hard done by with such a workstation. Great progress has been made across the board, with a much more flexible and intuitive install and configuration process and it's great to see a company of Novell's importance supporting and legitimising this incredibly useful project.

Reviewer: Martin Howse

THE VERDICT

Product: LTSP-4.0
Price: Free download
Contact: www.ltsp.org
Pros: Easy to configure
Cons: Some dated documentation; compatibility with previous versions broken

DESKTOP PC

UKLinux.net Multimedia Mini ITX PC

A small-format PC which is ideal for multimedia and home use

The Multimedia Mini ITX PC is extraordinarily small yet offers a lot of power at a good price

The market for preinstalled Linux PCs is still in its infancy so any attempt to mass-produce such machines is to be commended. The latest company to take the plunge is Stockport-based UKLinux.net. It has produced a range of natty little machines based upon VIA's diminutive ITX boards, which makes for a pleasant change from the ubiquitous room-dominating beige box.

The idea is to sell the units to the Linux community as low-cost, domestically friendly, GNU/Linux boxes, and as such Fedora Core 2 comes preinstalled as standard. We received an early example with Core 1, but we also tested the unit with Mandrake, SUSE and others, before upgrading to a UKLinux.net-supplied FC2. Every installation worked without a hitch.

The small desktop case comes with a neat blue stand to make a slim mini-tower system if desired. The supplied keyboard and optical wheelmouse are wireless and a diminutive 3D subwoofer system completes the package.

Realising that many users will be buying this machine as a second PC, or perhaps as an upgrade, UKLinux.net has taken the decision not to supply a monitor by default. That said, there's an almost endless list of TFT or CRT configurations available. The box contains a DVD player with TV-out, so it's very possible this particular PC will end up under the television set, time-shifting programs with the likes of MythTV.

Considering the geek-based market for this PC, it might be asked why UKLinux.net is bothering to sell such a beast. Most of its target audience are probably capable of building their own machines. However, it turns out that most people don't want to build their own box – even if you are confident with hardware, the time taken to purchase and assemble all the components is significant, and potential cost-savings are tiny.

To this end, the package here is good value, with 1GB RAM, a 120GB hard disk drive, rewritable 4x DVD, and slots for Cardbus/PCMCIA and Compact Flash (CF). The Cardbus slot is great for WLAN expansion and the CF slot, combined with USB2 and Firewire, makes the box a good hub for digital cameras. The ability to burn DVDs and play back on a TV screen completes the multimedia package.

Puzzlingly, the expansion ports (audio and USB) on the front of the case are merely empty holes – apparently the motherboard does not support the required breakout jumpers.

The other niggle is the choice of installed OS: Fedora. Whilst this is a good choice for most purposes, some work is needed before you can watch DVDs or listen to MP3s. Help is at hand from the motherboard manufacturer and VIA supports most popular versions of Linux with drivers available at its website (www.viaarena.com/?PageID=325), though the kernel drivers are mostly binary only. VIA even has an enhanced version of Xine, optimised for the board's MPEG-2 decoder, hosted at Sourceforge. This is worth installing because, although DVDs are played back with no dropped frames using other software packages, the hardware-accelerated Xine could lift a burden off the system, allowing the CPU to run cooler and leaving the machine more responsive for additional tasks.

None of this is much of a criticism for a box aimed at the Linux community – people not afraid to tinker with the software. But it would take a substantial support investment to punt a box like this to the Windows-accustomed general market.

Two cheaper PCs are available in the same form-factor. The entry-level Mini ITX PC comes in at just £199.99 inc VAT and uses the fanless 533MHz board. This is still fast enough for most purposes courtesy of VIA's hardware acceleration. The £299.99 Home Mini ITX PC shares the Multimedia PC's 1GHz M10K board but has 512MB RAM and a CD-RW rather than the DVD equivalent.

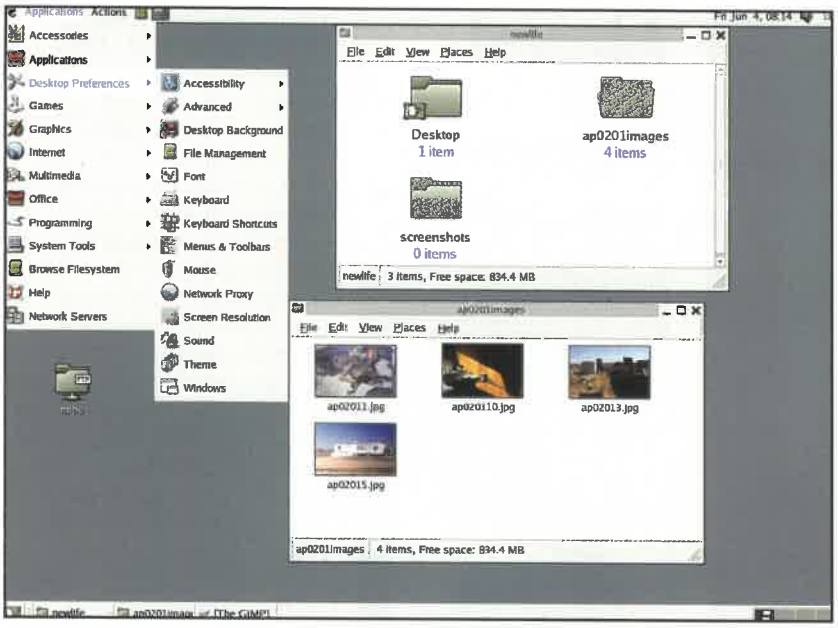
Whatever you choose, you'll end-up with a good-value package. Fedora is straightforward and, driver issues aside, you can replace it with your preferred free *nix.

The hardware is good-looking and will fit in most rooms better than larger, noisier rivals. The two cheaper versions could also find a place in any office. Early indications that the range is selling well should come as no surprise.

Reviewer: Richard Smedley

THE VERDICT

Product: Multimedia Mini ITX PC
Price: £365.95 ex VAT
Contact: www.uklinux.net/linuxpcs
Pros: Good value, good-looking
Cons: Not totally silent



DESKTOP ENVIRONMENT

GNOME 2.6

Bug fixes, polish and new features abound in the latest version of this desktop environment

It's been a long time coming and packs in a raft of new features and bugfixes across the board, but certain interface changes in this latest major GNOME release seem to have opened up a can of worms in the mainstream computer press. The hoary old question of GNU/Linux usability on the corporate desktop has reared its ugly head, and wider issues surrounding core GNOME developer, Miguel de Icaza, have further overheated the argument.

GNOME will hopefully always be an innovating desktop environment and this implies change. KDE and GNOME may not be the happiest of bedfellows but rather than competing they do seem to offer radically differing approaches to development and to the desktop. Fedora, Sun, Mandrake and SUSE are split down the middle as to which environment is installed by default, but this is a good thing which allows for healthy development of both desktops.

So what is all the fuss about and what desktop heresy have the GNOME developers committed? It's hard to believe that changes in the default behaviour for Nautilus, the GNOME file manager, almost succeeded in resurrecting the long-dead GNOME-KDE flamewars. And it's equally hard to understand how some people found it arrogant that GNOME developers had sought to impose their own GUI ideas on the poor users. Nautilus now employs a spatial user interface which opens one window for each folder or directory, rather than navigating backwards and forwards through the one window across different directories. Of course, this behaviour is more complex, as multiple windows are opened and closed.

A few other changes have been made to Nautilus, and few would argue that all of these, such as improved keyboard navigation support and better integration with networked filesystems, aren't solid steps in the right direction. There does seem to be a trend towards ironing out niggly input issues, with support for multiple keyboard layouts, easier changing of shortcuts and simplified switching between layouts. It's also good to see Dasher, the highly innovative predictive input system, thrown into the mix. There are some further developments under the GNOME bonnet which will interest application developers, and improvements to the GStreamer multimedia framework are a good sign that this intriguing project is now reaching maturity.

Installation under either Gentoo or Debian is simple enough using emerge or apt respectively, via a recent portage tree or sources. If you're running a seriously stripped down install, be prepared to wait a good while for your GNOME as the list of dependencies and GNOME modules to be installed is extensive. Under Gentoo it's also possible that some dependency clashes will have to be resolved by hand but this doesn't present much work. Those attempting a fresh distro install will be in luck with the latest Fedora Core which installs 2.6 by default but it's a shame to see that SUSE 9.1 only supports 2.4 out of the box.

As an early user of GNOME, and more recent user of the seriously minimal Ion desktop, it's hard not to be impressed with the polish, conciseness and sheer understated style of the complete GNOME experience, from GDM login, through file management to launching apps and undertaking minor desktop customisations. The basic appearance of both GDM and the GNOME desktop is clean, minimal and stylish, but in a functional manner. There can be no doubt that on looks alone such a desktop would integrate well within a demanding corporate environment. Icons are kept to a minimum and the upper and lower bars which contain applets, menus and other shortcuts are suitably understated.

The main division of menus under applications and actions groupings does make a lot of sense and submenus maintain the minimal, unfussy look and feel. The spatial interface under Nautilus, which can be launched from a menu, desktop icon or top bar icon, proved confusing at first, as it was not entirely obvious how to navigate up the directory tree. There was also some inconsistency in that launching Nautilus through different methods provoked a differing user interface. That said, working with multimedia files under Nautilus proved totally pleasant and simple, and basic customisations were simple to access and achieve. CD-writing integration within Nautilus is entirely functional and certainly does put some other OSes to shame.

Organisation and naming of apps by type and task is a decent approach to take and the lack of repetition within quite minimal menus is refreshing to see. It's always clear what a menu item will achieve and further information is always readily available.

In contrast to other desktop environments, GNOME 2.6 feels seamless, easy to use and without major glitches. Basic office functionality can be achieved quite easily and much-improved apps such as GnomeMeeting add a lot to the experience. And though it's hard to see why users would favour the somewhat clunky GNOME Epiphany browser over more feature-rich browsers, Epiphany is well worth using if you're after a no-nonsense speedy surf.

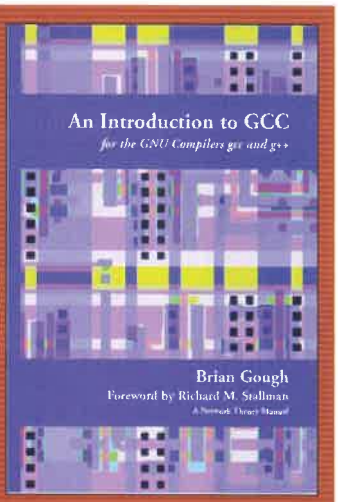
It's a fair comment that the level of customisation under GNOME may be lower than under, say, KDE, but this is in no way a bad thing, particularly for large-scale office deployments. And given the sheer polish and usability of this latest GNOME iteration, it's hard to see how anyone could argue for an alternative OS and desktop environment.

Reviewer: Martin Howse

THE VERDICT

Product: GNOME 2.6
Price: Free download
Contact: www.gnome.org
Pros: Stylish, intuitive interface with many totally usable GNOME apps
Cons: The latest spatial user interface for Nautilus does take some getting used to; install can be long-winded

An Introduction To GCC



Author: Brian Gough
Publisher: Network Theory
ISBN: 0954161793
Price: £12.95

OPTIMISATION IS DISCUSSED IN EXCELLENT DETAIL

Free Software coders may favour different tools and working methodologies when it comes down to version control and packaging, but the venerable GNU C Compiler (GCC) really does form the core of all Free programmers' practice. As a package, GCC embraces a range of command-line tools, while both gcc and g++ (for C and C++ code respectively) are catered for. This excellent title really does fill an essential gap within the GNU coder's knowledge base. A plethora of titles cover both the C and C++ languages, the foundation of any UNIX-like OS, but detailed, well-written documentation for all aspects of compilation is hard to find.

Author Brian Gough could hardly be accused of focusing purely on the technical aspects of GCC at the expense of more political matters. Kicking off with an inspirational foreword, contributed by Richard Stallman, principal author of GCC, this comprehensive work really does stress the importance of this essential compiler within the GNU project and Free Software community.

Of course, those seeking a totally thorough guide to all things GCC, from error messages and warning options right down to complex preprocessor options and profiling support, will be far from disappointed. *An Introduction to GCC* gets right down to work with coverage of simple compilation and linking issues aimed at the absolute beginner. Sample code, command-line options and output are both plentiful and concise, which enables Gough to cram in a good deal of well-written, seriously usable information. Even advanced coders, who have perhaps tended to pick up various tricks and techniques under GCC as part of their common working practice, should find much here to fill out their knowledge base.

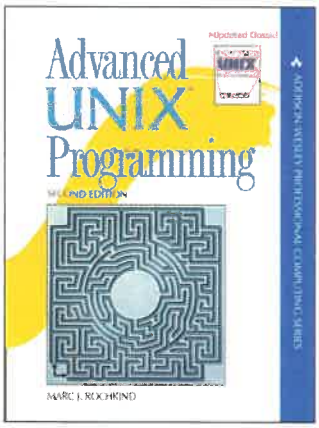
A good emphasis on portability is maintained throughout, with ANSI/ISO options well covered and platform-specific options clearly explained. Given that GCC is itself seriously portable, running on most platforms and producing code for all manner of processor, such an approach is essential.

Gough does a good job of covering the core compilation options, the GNU preprocessor cpp and compiler-related tools, such as gprof for profiling code and the GNU archiver, ar. Optimisation is discussed in excellent detail and this makes for particularly interesting reading. Further material, which digs deep inside the compilation process and examines raw executables, rounds out a wonderfully thorough guide to one of the most important Free Software projects.

Advanced UNIX Programming

Second Edition

Author: Marc J Rochkind
Publisher: Addison Wesley
ISBN: 0131411543
Price: £39.99

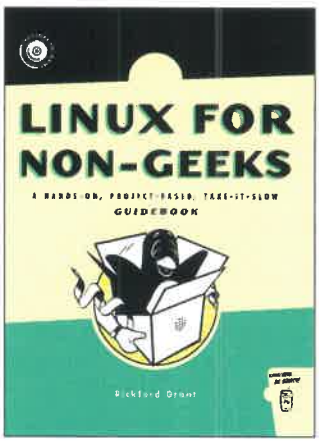


SYSTEM CALLS ARE ELEGANTLY DESCRIBED

It has certainly been a long time since this classic title was updated, and without doubt much has changed in the world of UNIX and UNIX-like OSes. Indeed, this work has been almost completely rewritten to reflect such changes, though the total emphasis on system calls remains. These are elegantly described by author Rochkind as the very foundation of UNIX, representing the sole interface between the kernel and user programs. System calls are the only way to access kernel functions, such as the filesystem, networking, I/O and interprocess communication mechanisms. Thus, it's obvious that no programmer working under any UNIX-like OS can afford to be ignorant about the full range and use of them.

While the first edition stressed the elegance and modularity of UNIX as it was implemented in 1985, since then things have certainly become a little messier. Of course, UNIX-like systems are still among the most reliably implemented and portable OSes around. Indeed, the success of both GNU/Linux and Darwin (the Mac OS X kernel) bears witness to the efficiency of a UNIX-like approach. And both these OSes, alongside Solaris and FreeBSD, were used to test the thousands of lines of sample code scattered throughout this seriously thorough work.

Given the author's quite obvious predilection for portability and standards, coders can rest assured that the sample code is both elegant and correct. Rochkind also helpfully explains the rather complicated history of a range of UNIX standards, such as the SUS (Single UNIX Specification) and POSIX, and how a good range of function calls are implemented. Unfortunately, though obviously extremely necessary for any coder, much of this material does bog-down an already somewhat terse text that can't shake off a rather crusty old-school feel. That said, there really is no better work, and Rochkind is one of a kind. The lengthy C code examples for useful applications such as a shell and Web server are excellent and the level of detail is staggering. Given the exquisite indexing, *Advanced UNIX Programming* functions well as a reference work, and useful appendices outline C++, Java and Jython interfaces.



Linux For Non-Geeks

Author: Rickford Grant
Publisher: No Starch Press
ISBN: 1593270348
Price: £23.99

AN IDEAL GIFT FOR A PARENT OR GRANDPARENT

The excellent No Starch Press seems to be carving out a serious niche for itself as youthful publishers of fun, contemporary titles aimed at

the absolute beginner. Steering well clear of the rather hoary old textbook approach favoured by many publishers, *Linux For Non-Geeks* offers an exciting project-based step-by-step guide to accomplishing everyday tasks under a shiny new Fedora Linux OS. And with Fedora core thrown in on two CDs, this makes for a complete package that would make an ideal gift for a parent or grandparent currently lumbered with a less usable system. Indeed, author Rickford Grant explains that this title was based on notes and instructions written for his own 72-year-old mother after an upgrade to Red Hat Linux. This provides a good measure both of how far GNU/Linux has progressed in terms of everyday ease of use, and of the level of user and tasks that this well-written book addresses.

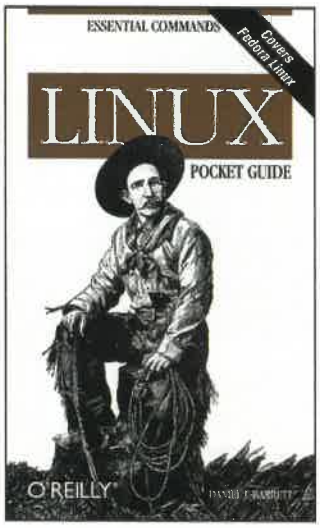
Rather than burdening the new user with unnecessary commands and functions, *Linux For Non-Geeks* does exactly what it says on the tin, explaining with clear, concise instructions how to install and use Fedora Linux for common tasks such as email, word processing, instant messaging, and viewing a range of digital media. The emphasis is very much on setting up and getting the most from a system, which any modern user would be comfortable with. Projects range from setting up and using a printer, to wireless networking and multilingual support. Basic command-line skills and core knowledge are well interwoven with these task-based exercises and it's surprising to see topics such as compiling from source and using APT and Synaptic to manage packages covered in good depth.

Linux For Non-Geeks really is quite thorough, both in terms of detail and the range of material covered, and author Rickford Grant certainly doesn't shy away from niggly trials such as Flash plug-ins or RealOne Player installation. Newbies, particularly those more used to other OSes, will appreciate these details and a good degree of handholding throughout, which totally suits such an audience. Grant's style is suitably conversational and new users will enjoy the feeling this gives of being watched over and gently coaxed by a more experienced user.

Linux Pocket Guide

Author: Daniel J Barrett
Publisher: O'Reilly
ISBN: 0596006284
Price: £6.95

QUELLS THE PANIC MOST NEWBIES NO DOUBT FACE



Whilst there does seem to be a trend amongst many publishers to deliver ever more comprehensive titles, cramming details of almost every command-line switch and GUI option across a huge range of tools and packages, O'Reilly can always be relied upon to publish works that deal concisely with one aspect of GNU/Linux or excel in offering a specific functionality. *Linux Pocket Guide* is exemplary in this respect, cleverly avoiding the unnecessary bloat associated with titles that share the same subject matter – Fedora Linux. Indeed, this highly portable volume manages to kill two birds with one stone, functioning both as handy quick reference and an essential introduction to basic everyday tools and commands. And though Fedora specifics such as desktop and package management are covered in some detail, nearly all of the material here could well be applied to almost any distro.

Linux Pocket Guide gently walks the new user through the basic concepts associated with filesystems and shells. Background material is well explained, with clear examples. The emphasis is very much on the command line, so once the newbie has achieved a solid, basic foundation in the Unix way of doing things, a good range of commands are explained in a clear, consistent manner with concise examples. Rather than attempting to offer a comprehensive reference for every single command and option, author Daniel Barrett bravely attempts to outline the bare essentials. And this approach really does work, providing a real boon for newbies who can easily be dismayed by verbose man pages.

Commands and background material are well organised by function, with basic everyday operations such as file compression, printing and editing and process control thoroughly covered. As the new user becomes proficient in such common operations, commands are grouped according to a contemporary task-based approach.

The essentials of working with email, browsing the Web, instant messaging and dealing with both audio and video are covered with style and simplicity. A more than cursory glance at shell scripting fills out this complete guide to day-to-day GNU/Linux usage, which should easily serve to quell the panic most newbies no doubt face when confronted with yet another huge Fedora Linux volume.

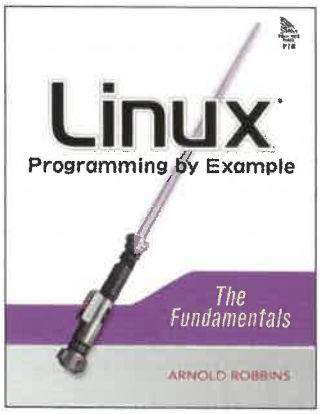
Linux Programming By Example

Author: Arnold Robbins
Publisher: Prentice Hall PTR
ISBN: 0131429647
Price: £31.99

REFRESHING TO SEE CODE SNIPPETS DISSECTED AND DRAWN FROM COMMON GNU/LINUX TOOLS SUCH AS CAT OR GAWK

This title's approach is similar to that of *Advanced UNIX Programming*, also reviewed in this issue, as it stresses the importance of system calls under the C language. However, whereas *Advanced UNIX* puts a greater emphasis on standards and deals purely with kernel-interface level calls, *Linux Programming By Example* takes a more modern approach by stressing real-world issues above all else. Standards are certainly important when it comes down to portability and one should be aware of POSIX and other examples, but on should also be equally aware of issues such as performance and robustness. Although *Linux Programming By Example* does cover much the same ground, with background material and sample code for function calls grouped around functions such as files, filesystems, I/O, and interprocess communication (IPC), a broader range of material that any GNU/Linux coder should be well aware of is also included. Memory management, library interfaces, internationalisation and debugging are discussed with plentiful example code. It's also refreshing to see code snippets dissected and drawn from common GNU/Linux tools such as cat or gawk. It's hard to think of examples that could greater stress the excellent real-world approach.

Subtitled *The Fundamentals*, *Linux Programming By Example* sets out purely to cover the core APIs that all Linux and Unix coders should be well aware of. In keeping with the elegant style and subject matter, this approach allows for a more concentrated book. Further volumes are planned that will provide a greater focus on IPC, networking, portability and development. However, with the exception of networking, *Linux Programming By Example* provides sufficient information for most readers' needs and the sheer quality of writing certainly makes up for any omissions.



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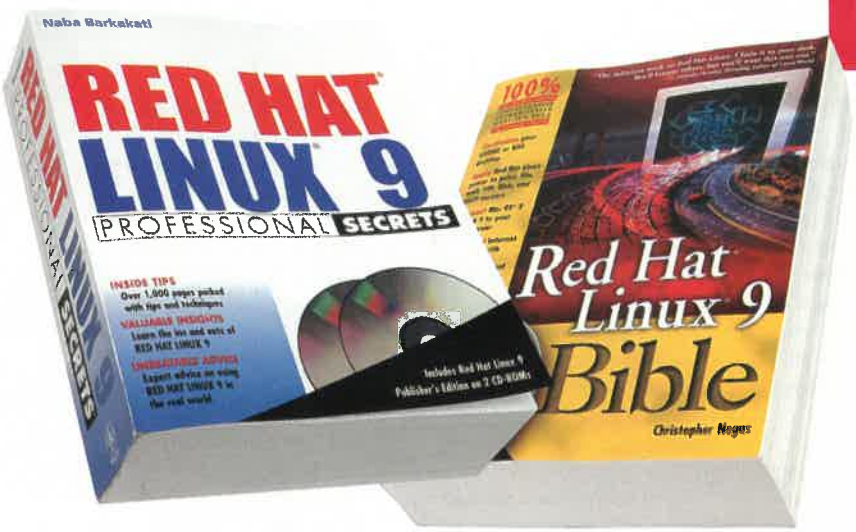

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Dirt free

Danny O'Brien

When we speak of Free Software, says Mr Stallman, we are referring to freedom, not price. I'd like to spend a few moments, if I may, talking about free as in dirt.

My local builder loves the Internet. "Years ago, I'd lay a foundation, and I'd have a few tons of soil left over. In the old days, I'd have to pay someone to take it away from me. Nowadays, I just post onto a local Web forum with a message saying 'Free Dirt!', and people just turn up and drive off with it. For free!"

Now there was a time in the distant past when, if I saw a sign saying 'Free Dirt!', I'd be suspicious. What was wrong with the dirt, exactly? Dirt generally comes with a price tag. I mean, not a high price tag – there's that whole 'dirt cheap' business contra-indicating that. But free? That's suspicious, even for dirt.

In the past, free meant, for the large part, stolen. Or broken. Or the first batch of it would belatedly transpire to be a highly addictive drug. (And come to think of it, 'dirt' is an excellent new slang term for some futuristic street pharmaceutical.)

Free was not to be trusted. My inner libertarian would quote author Robert A Heinlein at me: "There's no such thing as a free lunch." (For another five 'internal persona' credits, he would tell me what TAANSTAFL stood for. Bloody rip-off merchant. The government should do something about libertarians.)

The truth is that many people are scared off Free Software because of the price. Using the metaphor of the other science fiction novelist I can remember, Neal Stephenson, offering Linux to people is like being parked next to a pricey car dealership, offering free tanks to anyone who walks by. It looks dodgy. It looks too good to be true.

I think we sometimes forget this initial impression because after a short period using exclusively Free Software, we often end up with exactly the opposite prejudices.

You're looking for a program to manage your dirt inventory and allocation system. There are two programs you could use. One is a very popular £10 package; the other is free, Open Source software. Which do you entrust with the future of your dirt?

Free was not to be trusted. My inner libertarian would quote author Robert A Heinlein at me: "There's no such thing as a free lunch"

I hazard you'll probably go for the Free Software. Instinctive cheapskatery might be part of the reason. But if you're like me, you're also looking at that 10-pound deal, and thinking: "Ooo, that looks well shonky."

Thoughts flash into your head: what if it's not worth £10? You'll have been ripped off with no chance of getting your money back. But worse: what if it's worth more than £10? Supposing it's a really good program but the guy selling it hasn't a clue about a decent market price. He sells it too cheap and doesn't make enough money for it to be worthwhile. Upset, he stops developing it and abandons the code. You're stuck with a buggy, out-of-date dirt handler. No source to fix, no one who can take over the project. No way of extracting your dirt data, no way of fixing the bugs you find. The scene cuts to a close-up of your screaming face, disappearing under gurgling streams of mismanaged earth. Oh, the horror etc.

And anyway, why is this guy charging money in the first place? Is he really going to write a good and dirty program? Or is he just in it for the money? He's clearly not coding up this dirt processor for the love of it. Is this one of a million other 10-pound deals he's working on?

Is dirt just a pathetic side-issue for him? Is he really into something else, like dust maybe, but feels he has to do dirt deals because of the income? Does he secretly despise those begging, cowering dirt handlers, who plead with and cajole him to take the money, stolen from their own children's mouths, handing it willingly over to the fat cat, vainglorious, cigar-smoking software magnate, who sits swilling champagne on an Aeron made out of diamonds and the skulls of customers who have died in poverty because of his greedy ways?

Ten pounds may be a small price to pay, but the long-term implications are too horrific to contemplate.

However, I'm not entirely happy with this reversal in my approach. True, it means I get a lot of free stuff (including some very nice addictive drugs, thanks), but surely not all materials that one pays for should be rejected out of hand. This paragraph, for instance, is lovely. It's well worth the penny or so you paid for it and you should continue to fork out for it, so that I can continue to finance my suddenly-more-pricey drug habit/child skull-utensil needs.

Also, I have a bunch of dirt that I mistakenly bought up in the belief that I was getting some sort of deal from my local builder. It's good stuff. How about a tenner, all in?

Danny O'Brien co-edits the unkillable newsletter, NTK (www.ntk.net)

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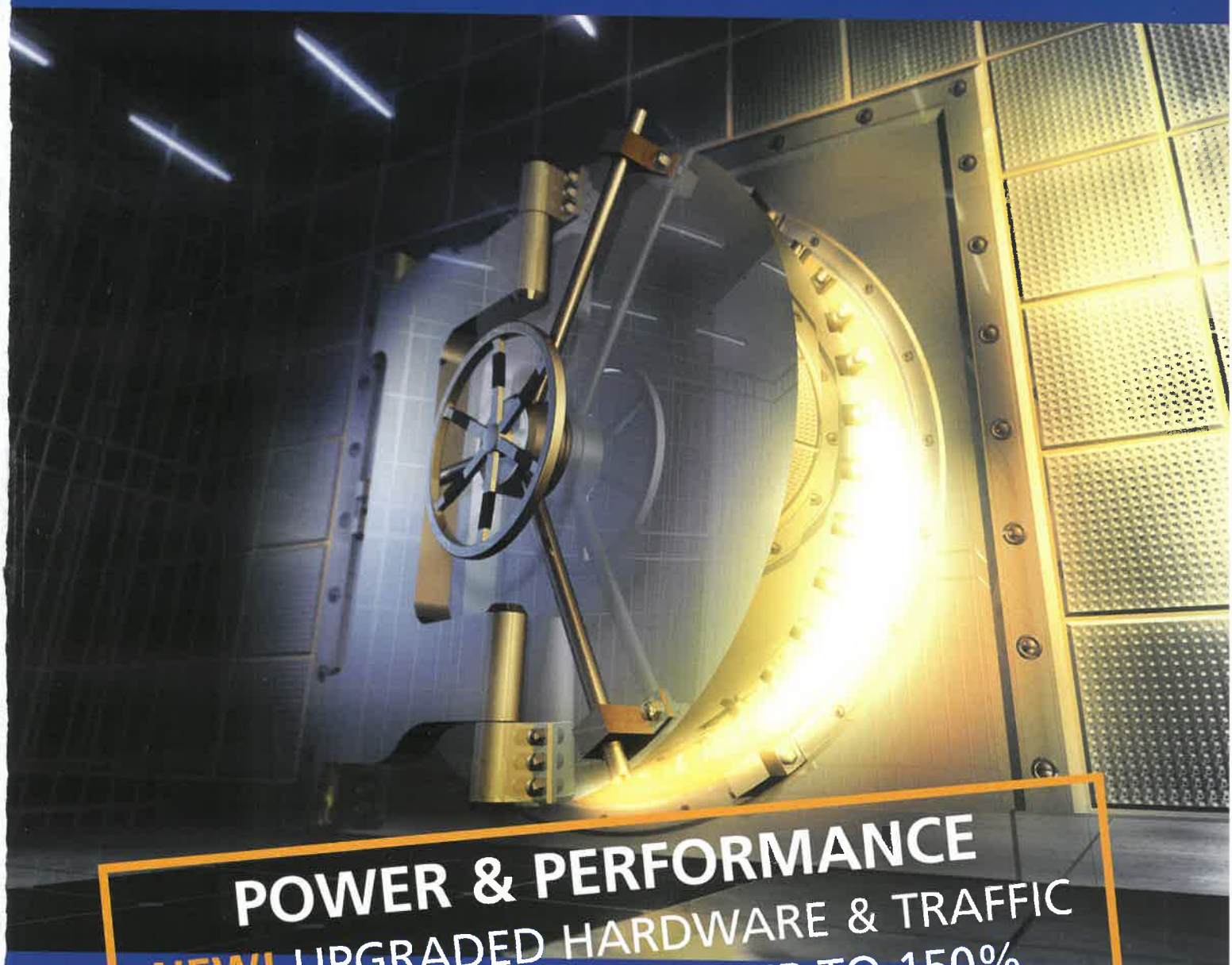

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